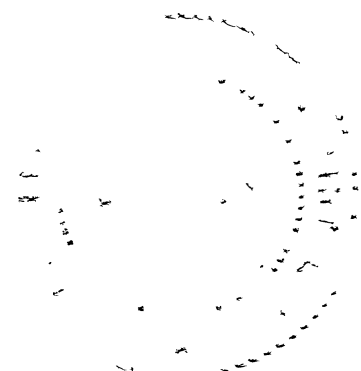


Emergency
Response
Procedures

A MANUAL OF
STANDARD OPERATING PROCEDURES
FOR USE DURING EMERGENCIES

MISSOURI DIVISION OF HEALTH
July 1984



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COLD/HEAT

1. Disaster Situation: Extreme Heat or Cold
2. Lead Program Area Within the Division of Health: Section of Local Health Services
3. Contact Persons:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107
George Thomas	314/751-2017	314/635-0566
Jane Dey	314/751-2115	314/636-5371
4. Other Program areas Within Division of Health having Input and Concern: Section of Epidemiology Services

H. Denny
Donnell, M.D. 314/751-2713 314/442-8407

Extreme heat or cold play hardest against the elderly and poor. Typical responsibilities would include active involvement of district health offices and local health units. Kansas City and St. Louis Health Departments have active programs in place to offset the effects of these conditions, but rural areas are less prepared and organized to cope with the problem. More deaths occur in urban areas due to larger number of people and the retention of heat over long periods.

5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of situation, i.e., location, time, number/area involved, severity/casualty of situation, etc.
 - E. Contact other Division of Health personnel needed for response.
(See Number 4)
 - I. Call District Health Office and outline status of situation.
 - II. District Office contacts local health unit to establish communication linkage and secure latest assessment of the situation.
 - III. Local Health assists district offices and local units to prepare to respond to the situation.

- F. Contact immediate supervisor in chain of command.
- G. Initiate response activities as outlined below:
 - I. Determine local preparedness to assist citizens
 - II. Disseminate criterion to determine a heat or cold emergency.
 - III. Develop daily reporting system where a system does not exist with Section of Epidemiology Services.
 - IV. Develop monitoring system of emergency between local units and Section of Epidemiology Services.
 - V. Develop news releases and other mass media outlets for use by Division of Health Director.
 - VI. Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley Phone: 751-3371.
- H. Make written report/notes of notification and situation immediately with date and time (24 hours clock). Include observations and recommendations on adequacy of Standard Operating Procedures.

DROUGHT

1. Disaster Situation: DROUGHT
2. Lead Program Area Within Division of Health: Bureau of Community Sanitation
3. Contact Persons:

<u>NAME</u>	<u>Office Phone</u>	<u>Home Phone</u>
Erwin Gadd	314/751-3696	314/893-3622 417/532-2421
Fred Unnewehr	314/751-3696	314/491-3514
Stan Cowan	314/751-3696	314/893-2681
David Stull	314/751-3696	314/893-5039
4. Steps to be taken, in order of priority, are:
 - A. Confirm identify of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of situation: e.g., approximate quantities of water available at present, daily needs for absolute survival.
 - E. Contact other Division of Health personnel needed for response: e.g., heat-related illness program staff, laboratory, etc.
 - F. Contact immediate supervisor in chain of command.
 - G. Initiate Division of Health response activities as follows:
 - I. Evaluate immediate daily water needs for drinking purposes.
 - II. Evaluate water sources with respect to daily quantity and quality.
 - III. As needs indicated based on evaluation, arrange for supplemental emergency water sources; e.g., bottling and handling equipment.
 - IV. Contact responsible officials of concerned political jurisdiction for their input and support.
 - V. Contact public news media sources for direction to affected water users.

- IV. Arrange for necessary laboratory support to analyze water samples.
- VII. Locate supply of necessary chemicals for treating water supplies, e.g., chlorine.

Bureau of Community Sanitation

Internal Disaster Response: Drought

The following is a brief guide for personnel of the Bureau of Community Sanitation in responding to droughts. A drought situation is usually gradual in its development as a result of restricted rainfall and first affects drinking water supplies. In drought situations, the following responsibilities may be expected:

1. Seek out water sources affording adequate quantity for human health needs.
2. Provide supplemental treatment. The supplemental treatment of hauled temporary drinking water supplies is usually necessary. The addition of chlorine to the container of water to a level of 1.0 ppm of available chlorine is normally recommended. Samples of drinking water should be collected and analyzed at regular intervals to determine public health safety.
3. In preparation for such a drought, local officials responsible for emergencies may choose to contact local food processors, such as fluid milk dairies, which have equipment available to package drinking water for distribution to the public through retail food outlets.

LEAD PROGRAM AREA WITHIN
DIVISION OF HEALTH

Bureau of Community Sanitation

CONTACT PERSONS WITHIN BUREAU
OF COMMUNITY SANITATION

<u>Name</u>	<u>Office phone</u>	<u>Home Phone</u>
Erwin Gadd	314/751-3696	314/893-3622 or 417/532-2421
Fred Unnewehr	314/751-3696	314/491-3514
Stan Cowan	314/751-3696	314/893-2681
David Stull	314/751-3696	314/893-5039

OTHER PROGRAM AREAS WITHIN
DIVISION OF HEALTH HAVING
INPUT AND CONCERN:

Section of Local Health Services

Billy Rikard	314/751-3405	314/893-3107
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Section of Laboratory Services

Dr. Elmer Spurrier	314/751-3334	314/365-5567
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OTHER STATE AND LOCAL
AGENCIES HAVING
CONCERN:

Department of Natural Resources,
Division of Environmental Quality

Water	Bill Ford	314/751-3241
Sewage	Charles Stieffermann	314/751-3241
Solid Wastes	Dave Bedan	314/751-3241
Local Fire Department		

EARTHQUAKE

1. Disaster Situation: Earthquake
2. Lead Program Area Within the Division of Health: Section of Local Health Services
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107
George Thomas	314/751-2017	314/635-0566
Jane Dey	314/751-2115	314/636-5371
4. Other Program areas Within Division of Health having Input and Concern: Earthquakes are of such impact that all resources of the Division of Health will need to be mobilized.
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of situation, i.e., location, time, number/area involved, severity/casualty of situation, etc..
 - I. When one of the specific circumstances is present refer to appropriate S.O.P. in this manual.
 - a. Page 33 Nuclear Power Plant Accident Emergency Response
 - b. Page 29 Industrial Plant Accidents
 - c. Page 42 Transportation Incidents
 - d. Page 30 Mass Casualty Emergency Response
 - e. Page 57 Embargo and Detention of Food, Drugs, and Cosmetics in Disasters and Emergency Situations.
 - II. Refer lead agency responsibility to cited lead agency and offer assistance.
 - E. Contact other Division of Health personnel needed for response.
(See number 4)

- I. Call District Health Office and outline status of situation.
- II. District Office contacts local health unit to establish communication linkage and secure latest assessment of the situation.
- III. Local Health assists district offices and local units to prepare to respond to the situation.
- F. Contact immediate supervisor in chain of command.
- G. Initiate response activities as outlined below:
 - Local units or when necessary district offices to:
 - I. Determine availability of emergency lodging, food, water and fuel. Contact voluntary agencies, churches and schools.
 - II. Maintain information of routes that can be used for rescue and evacuation. Contact highway patrol, sheriff, city police and fire department.
 - III. Determine availability of hospitals/services and Emergency Medical Services.
 - IV. Determine status of sewage systems.
 - V. Determine food and water sanitation status.
 - VI. Insure proper registration of dead for vital statistics
Vital statistics contacts: Gary Shipley Phone: 751-3371
- H. Make written report/notes of notification and situation immediately with date and time (24 hours clock). Include observations and recommendations on adequacy of Standard Operating Procedure

ANIMAL DISEASE EPIDEMIC

1. Disaster Situation: Animal Disease Epidemic
(Infectious, Zoonotic or Toxic)
2. Lead Program Area Within the Division of Health: Bureau of Veterinary Public Health
Section of Epidemiology Services
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
F.T. Satalowich	314/751-2713	314/442-8747
Pat Phillips	314/751-2713	314/635-8030
Margaret Spurrier	314/751-2713	314/365-5567
4. Other Program areas Within Division of Health having Input and Concern:

Missouri Division of Health Laboratory

Elmer Spurrier	314/751-3334	314-365-5567
John Goins	314/751-4573	314-634-4431
Henry Strother	314/751-3372	314-636-5933

Bureau of Community Sanitation

Erwin Gadd	314/751-3696	314-893-3622
John Norris	314/751-3696	314/635-7398
Fred Unnewehr	314/751-3696	314/491-3514
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of the outbreak with respect to time, place and person:

TIME - onset dates of the first few known cases must be obtained as a lead to incubation period and identity of organism

 - time of any event through to be related to cause
 - time of peak frequency of cases if known to provide a general feeling for shape of epidemic curve
 - time of onset of last known case

PLACE - location by community, address or area description to give a sense of the geographic dispersal of cases

- any known relationship of cases to specific places thought to have causal relevance
- location of hospitalization or travel if cases have moved from original location at onset of illness

PERSON/ANIMAL

- number of cases known or estimated to be involved
- population of community or subgroup from which cases came, human or animal
- person who may be able to identify all members of the subgroup involved (leader of involved organization or community)
- description of typical illness and unusual signs and symptoms
- basis of diagnosis--lab results or physicians/veterinarians involved in the diagnosis--location of laboratory utilized
- any information available on usual number of cases of this type of illness in similar time period. Who might have data?

E. Contact other Division of Health personnel needed for response, inclusive of Missouri Division of Health Laboratory, Missouri Department of Agriculture, U.S. Department of Agriculture, and University of Missouri Veterinary Diagnostic Laboratory.

U.S. Department of Agriculture

Dr. Robert Moody	314/636-3116	314/893-5894
Dr. Keith Sherman	314/636-3116	314/636-4860

Missouri Department of Agriculture

Dr. C.W. Monsees	314/751-3377	314/635-1549
Dr. Pat McGinnis	314/751-3377	314/642-4635

University of Missouri Veterinary Diagnostic Laboratory-Columbia

Dr. Larry Morehouse	314/882-6811	314/442-7066
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University of Missouri
Dr. Don Blenden

314/382-3083 314/442-7831

- F. Contact immediate supervisor in chain of command.
- G. Monitor disease condition, maintaining liaison with agricultural agencies, and directing control activities to human population.
- I. Monitoring of zoonotic disease condition occurs in:
 - a. Human populous - by submission of morbidity cards by physicians or hospital registrars. This data is then monitored by the Bureau of Veterinary Public Health.
 - b. Animal populous - by submission of morbidity cards by veterinarians and by monitoring of counties by 17 district veterinarians (USDA and MDA employees).

They telephonically report to Dr. Moody or Dr. Monsees in Jefferson City who contact the Bureau of Veterinary Public Health of any activity.
- II. Directing of control activities in:
 - a. Human populous - via normal channels of disease control and quarantine action.
 - b. Animal populous - via normal channel of disease control and quarantine action within the Missouri Department of Agriculture and USDA with the following exceptions:
 - (1) Farm animals (horse-cow-pig-goat-sheep-poultry) of small numbers, 3 or less, would be placed under control or quarantine measures by the State Public Health Veterinarian.

- (2) Non-farm animals (dogs-cats-exotic pets-reptiles) would be placed under control or quarantine measures by the State Public Health Veterinarian, in conjunction with the assistance of central, district, and local sanitarians.

All of the above are duly deputed to act on behalf of the Director of the Division of Health and under the direction of the State Public Health Veterinarian.

- H. Make written report/notes of notification and situation immediately with date and time (24 hours clock).

HUMAN DISEASE EPIDEMIC

1. Disaster Situation: Human Disease Epidemic
2. Lead Program Area Within the Division of Health: Bureau of Communicable Diseases
Section of Epidemiology Services
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Margaret Spurrier	314/751-2713	314/365-5567
H. Denny Donnell	314/751-2713	314/442-8407
Patricia Mott	314/751-2713	816/273-2111
4. Other Program areas Within Division of Health having Input and Concern: Section of Laboratory Services
314/751-3334
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain details of situation, i.e., location, time, number/area involved, severity/causality of situation, etc.
 - D. Contact other Division of Health personnel needed for response.
(See Number 4)
 - I. Call District Health Office and outline status of situation.
 - II. District Office contacts local health unit to establish communication linkage and secure latest assessment of the situation.

- III. Local Health assists district offices and local units to prepare to respond to the situation.
- E. Contact immediate supervisor in chain of command.
- F. Initiate response activities as outlined below:
 - I. Determine local preparedness to assist citizens
 - II. Develop daily reporting system where a system does not exist with Section of Epidemiology Services.
 - III. Develop monitoring system of emergency between local units and Section of Epidemiology Services.
 - IV. Develop news and other mass media releases for use by Division of Health Director.
 - V. Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley, Phone: 751-3371.
- G. Make written report/notes of notification and situation immediately with date and time (24 clock hours). Include observations and recommendations on adequacy of Standard Operating Procedures.

Human Disease Epidemic

Internal Response: Human Disease Epidemic

1. Standard Order of Procedure for Human Disease Epidemic
2. Responsible Lead Program is Bureau of Communicable Disease, Section of Epidemiology Services.
3. Contact persons, in priority order, are:
 - Margaret Spurrier, Director, Communicable Disease Program,
Phone: 314 751-2713 (314 365-5567 Home)
 - H. Denny Donnell, Jr., M.D., Director, Section of Epidemiology
Services, Phone: 314 751-2713 (314 442-8407 Home)
 - Patricia Mott, R.N., Director, Nosocomial Disease Program,
Phone: 314 751-2713 (816 273-2111 Home)
4. Other Division of Health program/activities to be notified are:
 - Section of Laboratory Services
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of the outbreak with respect to time, place and person:
 - TIME - onset dates of the first few known cases must be obtained as
a lead to incubation period and identity of organism
 - hour of onset in relation to meal time must be obtained if
it is thought to be a food poisoning.
 - time of any event thought to be related to cause
 - time of peak frequency of cases if known to provide a general
feeling for shape of epidemic curve
 - time of onset of last known case
 - PLACE - location by community, address or area description to give
a sense of the geographic dispersal of cases
 - any known relationship of cases to specific places thought
to have causal relevance
 - location of hospitalization or travel if cases have moved
from original location at onset of illness

PERSON- number of cases known or estimated to be involved

- population of community or subgroup from which cases came
- person who may be able to identify all members of the subgroup involved (leader of involved organization or community)
- description of typical illness and unusual signs and symptoms
- basis of diagnosis--lab results or physicians involved in the diagnosis--location of laboratory utilized
- any information available on usual number of cases of this type of illness in similar time period. Who might have data?

E. Contact other Division of Health personnel needed for response, e.g. laboratory, etc.

F. Contact immediate supervisor in chain of command.

G. Initiate response activities as outlined below:

- i. If any doubt remains after step D. about whether the number of cases is truly greater than expected, compare with State Center for Health Statistics, Bureau of Communicable Disease files, or local health authorities to establish the existence of epidemic proportions.
- ii. Verify diagnosis by contacting laboratory and/or physicians involved. If no diagnosis established, consider possibilities to assure that appropriate tests are being ordered. This may require reading literature, consulting with other epidemiologists or clinicians and laboratory personnel.
- iii. Request local health authorities to gather additional available information on known cases using appropriate standard case investigation forms. Request that epidemic curve be prepared by date (or hour) of onset for all currently known cases. Request that spot map be prepared if cases are less than 50 or that area map be prepared if cases are over 50; the latter to show attack rate by area.
- iv. Assure that appropriate laboratory specimens are being collected and properly preserved and transported to most appropriate laboratory.
- v. Consult with local health authorities regarding control measures appropriate to probable or known causal organism.
- vi. Develop case investigation form with questions most suitable to apparent cause of epidemic illness and make sufficient copies for estimated number of cases. (This may be done locally or centrally.)
- vii. Establish daily reporting to assure proper flow of information from site of epidemic to state government.

- viii. Recruit and train sufficient personnel to accomplish data collection and analysis at or near site of epidemic.
 - ix. Collect, analyze and report data.
 - x. Establish single local authority to implement control measures with medical and government.
 - xi. Establish single local authority to implement health education and handle public media.
 - xii. Develop liaison with contiguous health jurisdictions to minimize likelihood of spread of epidemic into their areas.
- H. Make written report/notes of notification and situation immediately with date and time (24 hours clock).

FIRE

1. Disaster Situation: Fire
2. Lead Program Area Within the Division of Health: Section of Local Health Services
3. Contact Persons:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107
George Thomas	314/751-2017	314/635-0566
Jane Dey	314/751-2115	314/636-5371
4. Other Program Areas Within Division of Health having Input and Concern: Bureau of Community Sanitation

Erwin Gadd	314/751-3696	314/893-3622 417/532-2421
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Fire becomes a health issue when it affects food, water, lodging and drugs in food stores, pharmacies, medical facilities, restaurants, sleeping establishments and storage facilities. Salvaging efforts need to be reviewed carefully and destruction of contaminated substances should be accomplished utilizing available appropriate methods of destruction. Securing controlled substances should be accomplished as soon as possible.

5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of situation, i.e., location, time, number/area involved, severity/casualty of situation, etc.
 - I. When one of the specific circumstances is present refer to appropriate Standard Operating Procedure in this manual.
 - a) Page 33 Nuclear Power Plant Accident Emergency Response
 - b) Page 29 Industrial Plant Accidents
 - c) Page 42 Transportation Incidents
 - d) Page 30 Mass Casualty Emergency Response
 - e) Page 57 Embargo and Detention of Food, Drugs, and Cosmetics in Disasters and Emergency Situations

- II. Refer lead agency responsibility to cited lead agency and offer assistance.
- E. Contact other Division of Health personnel needed for response.
(See No. 4).
 - I. Call District Health Office and outline status of situation.
 - II. District Office contacts local health unit to establish communication linkage and secure latest assessment of the situation.
 - III. Local Health assists district offices and local units to prepare to respond to the situation.
- F. Contact immediate supervisor in chain of command.
- G. Initiate response activities as outlined below:
Local units or when necessary district offices to:
 - I. Determine need for emergency medical services.
 - II. Determine need for emergency lodging.
 - III. Determine need for clothing, food and water.
 - IV. Determine need for medical personnel and hospital resources.
 - V. Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley, Phone: 751-3371.
- H. Make written report/notes of notification and situation immediately with date and time (24 hours clock).

FLOOD

1. Disaster Situation: Flood
2. Lead Program Area Within the Division of Health: Bureau of Community Sanitation
3. Contact Persons:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Erwin Gadd	314/751-3696	314/893-3622 417/532-2421
John Norris	314/751-3696	314/635-7398
David Stull	314/751-3696	314/893-5039
Stan Cowan	314/751-3696	314/893-2681
Billy Blythe	314/751-3696	314/896-4894
4. Other Program areas Within Division of Health having Input and Concern:

<u>Section of Local Health Services</u>		
<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107

<u>Section of Laboratory Services</u>		
<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Dr. Elmer Spurrier	314/751-3334	314/365-5567
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of situation; e.g., emergency evacuation needs, type of water supply, etc.
 - E. Contact other Division of Health personnel needed for response; e.g., laboratory, etc.
 - F. Contact immediate supervisor in chain of command.
 - G. Initiate Division of Health response activities as follows:
 - I. Need for mass feeding facilities.

II. Need for emergency housing.

III. Need for emergency water supply.

IV. Possible food sources.

Following immediate emergency:

- a. Availability of water sample bottles.
- b. Availability of chemicals for treating drinking water.
- c. Outlets for proper disposal of waste food and materials.
- d. Sources of available medical care and supplies.
- e. Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley, Phone: 751-3371.

H. Make written report/notes of notification and situation immediately with date and time (24 hours clock). Include observations and recommendations on adequacy of Standard Operating Procedure

Bureau of Community Sanitation

Internal Disaster Response: FLOOD

1. Disaster Situation: Flood
2. Lead Program Area Within the Division of Health Bureau of Community Sanitation
3. Contact Persons:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Erwin Gadd	314/751-3696	314/893-3622 417/532-2421
John Norris	314/751-3696	314/635-7398
David Stull	314/751-3696	314/893-5039
Stan Cowan	314/751-3696	314/893-2681
Billy Blythe	314/751-3696	314/896-4894
4. Other Program areas Within Division of Health having Input and Concern:

<u>Section of Local Health Services</u>		
<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107

<u>Section of Laboratory Services</u>		
<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Dr. Elmer Spurrier	314/751-3334	
5. Other State Agencies having Concern:

<u>Department of Natural Resources</u>	
<u>Division of Environmental Quality</u>	
<u>Sewage</u>	<u>Office Phone</u>
Charles Stieffermann	314/751-3241
<u>Water</u>	
William Ford	314/751-3241
<u>Solid Waste</u>	
Dave Bedan	314/751-3241

A flood may be localized and sudden, which calls for immediate response. Typical responsibilities would include the following: setting up emergency feeding sites for flood victims (see Appendix E); supervision of emergency human waste disposal facilities; review and approval of food sources used by the victim; and arranging for and reviewing temporary housing.

In flood situations caused by excessive wide-spread rainfall or melting snow, the following responsibilities may be expected:

- A. Review of submerged food supplies for salvage purposes (Appendix D).
- B. Cleaning and chlorinating water supplies (Appendix B & C).
- C. Collection of appropriate water samples (Appendix A).
- D. Supervision and review of cleaning procedures for housing intended to be rehabilitated (Appendix B).
- E. Supervision of cleaning procedures for furniture.
- F. Establishment of local program and supervision of efforts in insect and rodent control.
- G. Supervision of solid waste storage.

FOOD POISONING

1. Disaster Situation: Food Poisoning
2. Lead Program Area Within the Division of Health: Bureau of Community Sanitation
3. Contact Persons:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Erwin Gadd	314/751-3696	314/893-3622 417/532-2421
David Stull	314/751-3696	314/893-5039
John Norris	314/751-3696	314/635-7398
4. Other Program areas Within Division of Health having Input and Concern:

<u>Section of Epidemiology Services</u>		
<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
H. Denny Donnell	314/751-2713	314/442-8407

<u>Section of Local Health Services</u>		
<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of identifier.
 - D. Obtain details of situation, e.g., approximate number of ill, number to hospital, probable onset, etc.
 - E. Contact other Division of Health personnel needed for response, e.g., state epidemiologist, laboratory, etc.
 - F. Contact immediate supervisor in chain of command.

G. Initiate Division of Health response activities as follows:

- I. Evaluate magnitude of incident.
- II. Contact hospital if need indicates (seek Division of Health medical input).
- III. Contact emergency medical transportation facilities.
- IV. Collect suspect food and water samples.
- V. Obtain patient histories.
- VI. Obtain patient stools and vomitus.
- VII. Prepare and evaluate epidemiological work-up.
- VIII. Confirm causative agent, if possible.
- IX. Prepare narrative report.

BUREAU OF COMMUNITY SANITATION

INTERNAL DISASTER RESPONSE: FOOD POISONING

The following is a brief guide for personnel of the Bureau of Community Sanitation in responding to food poisoning of a disastrous consequence.

Immediate response is of importance. Often a delay in investigation results in possible involved food being unavailable for sampling, patient being unavailable for interviews and obtaining necessary stool samples, and inaccurate histories of patients.

In foodborne disease investigations of considerable magnitude, the following responsibilities may be expected.

- (1) Confirm situation.
- (2) Form professional hypotheses (with input from state epidemiologist).
- (3) Obtain suspect food samples (Appendix F).
- (4) Obtain patient histories (Appendix F).
- (5) Obtain patient stools and vomitus.
- (6) Prepare and evaluate epidemiological work-up (Appendix F).
- (7) Confirm earlier hypotheses, if possible.

LEAD PROGRAM AREA WITHIN
THE DIVISION OF HEALTH:

Bureau of Community Sanitation

CONTACT PERSONS WITHIN BUREAU
OF COMMUNITY SANITATION:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Erwin Gadd	314/751-3696	314/893-3622 417/532-2421
David Stull	314/751-3696	314/893-5039
John Norris	314/751-3696	314/635-7398

OTHER PROGRAM AREAS WITHIN
DIVISION OF HEALTH HAVING
INPUT AND CONCERN:

Section of Epidemiology Services

<u>Contact:</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107

INDUSTRIAL PLANT ACCIDENTS

1. Disaster Situation: INDUSTRIAL PLANT ACCIDENTS
2. Lead Program Area Within the Division of Health: Bureau of Environmental Epidemiology
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Brent Mattox	314/751-2713	314/634-3123
James Kountzman	314/751-2713	314/635-6596
John Crellin	314/751-2713	314/893-6237
4. Other Program areas Within Division of Health having Input and Concern:

Section of Local Health Services
 Section of Laboratory Services
5. Steps to be taken, in priority order, are:
 - A. Keep all civilians and personnel away from area. If explosion is possible, evacuate the facility.
 - B. Obtain information from any available plant personnel on what materials may be present.
 - C. Call the Bureau of Environmental Epidemiology and give the following information, if available:
 - I. Name of caller and call back number.
 - II. Nature and location of the incident.
 - III. Company and/or facility name.
 - IV. Local conditions
 - V. Names of any hazardous materials present.
 - D. Make every effort to keep a phone line open to receive information.
 - E. Insure proper registration of dead for vital statistics.
 Vital statistics contacts: Gary Shipley, Phone: 751-3371.

MASS CASUALTY ACCIDENT

1. Disaster Situation: Mass Casualty Accident
2. Lead Program Area Within the Division of Health: Bureau of Emergency Medical Services
3. Contact Person:

Kenneth Cole	314/751/2713	314/636-5590
Frank Foster	314/751-2713	314/635-5347
Michael Gray	314/751-2713	314/893/4261
Nancy Hudson	314/751-2713	314/635-3462
4. Steps to be taken, in priority order, are:
 - A. Call the Bureau of Emergency Medical Services and give the following information:
 - (1) Name of caller and call back number.
 - (2) Nature and location of incident.
 - (3) Type of injuries, if known.
 - (4) Names of any hazardous materials present, if known.
 - (5) Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley, Phone: 751-3371.

MASS CASUALTY

INTERNAL DISASTER RESPONSE PLAN

1. Disaster Situation: MASS CASUALTY
2. Lead Program Area Within the Division of Health: Bureau of Emergency Medical Services
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Kenneth Cole	314/751-2713	314/636-5590
Frank Foster	314/751-2713	314/635-5347
Michael Gray	314/751-2713	314/893-4261
Nancy Hudson	314/751-2713	314/635-3462
4. Other Program areas Within Division of Health having Input and Concern: Bureau of Hospital Licensing:

Charles Gillilan	314/751-2713	314/893-3547
Gerald Woods	314/751-2713	314/636-6879
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of situation, i.e., location, time, number/area involved, severity/casualty of situation, etc.
 - E. Contact other Division of Health personnel needed for response.
(See Number 4)
 - F. Contact immediate supervisor in chain of command.

Kenneth Cole	314/751-2713	314/636-5590
Thomas Singleton	314/751-2713	314/636-2458
Garland Land	314/751-2713	314/893-2748

- I. If deemed appropriate or if casualties are greater than 25 individuals report to the Bureau of Emergency Medical Services where telephones and appropriate files are kept.
 - II. Contact local ambulance services to determine if there are any problems.
 - III. Contact hospital emergency room nearest scene to determine if there are any problems.
 - IV. It is assumed that if a disaster occurs in Kansas City or St. Louis that other hospitals and emergency response personnel are automatically notified through their own communications network.
 - V. If a disaster occurs in out-state Missouri, notify appropriate hospitals/ambulance services to alert them. (These are somewhat distant from the "scene and local hospital" but in the patient flow pattern and capable of assisting and receiving these types of injuries). Also notify the University of Missouri Medical Center Emergency Department, 314/882-8091.
 - VI. Maintain contact as appropriate with the State Emergency Management Agency duty officer. (Refer to SEMA Duty Officer Response Manual dated September 1983). 314/751-2748.
- H. Make written report/notes of notification and situation immediately with date and time (24 hour clock).

NUCLEAR POWER PLANT ACCIDENT

1. Disaster Situation: Any accident involving radioactive material
2. Lead Program Area Within the Division of Health: Bureau of Radiological Health
3. Contact Person:

Kenneth Miller	314/751-2713	314/635-5489
Gary McNutt	314/751-2713	314/635-9769
Cynthia Becker	314/751-2713	314/634-2092
Reggie Cope	314/751-2713	314/827-3199
Leticia Diaz	314/751-2713	314/634-2490
Mark Minor	314/751-2713	314/474-4649
SEMA	314/751-2748	
	(24-hour no.)	
4. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Obtain name and phone number of notifier and any other persons who might provide additional information.
 - C. Obtain details of situation, i.e., location, time, brief description of situation, etc. This should be limited to information which the notifier has immediately available. DO NOT MAKE ON-SITE INSPECTION UNLESS REQUESTED TO DO SO BY THE BUREAU OF RADIOLOGICAL HEALTH.
 - D. Initiate response activities as outlined below:
 - (1) Notify the Bureau of Radiological Health (priority list in item 3).
 - (2) If the notifier requests immediate advice, the following instructions are appropriate:
 - a. Perform emergency functions (rescue, firefighting).
 - b. Isolate area and control access.
 - c. Do not attempt any remedial actions.
 - d. Wait for the arrival of technical personnel or further instructions.

BUREAU OF RADIOLOGICAL HEALTH PERSONNEL

INTERNAL DISASTER RESPONSE: ANY ACCIDENT INVOLVING RADIOACTIVE MATERIAL

The following is a brief guide for personnel of the Bureau of Radiological Health in responding to radiological incidents. The procedures outlined below, which are guides subject to professional judgment, are appropriate for the relatively common kinds of radiological incidents including the following:

- A. Transportation accidents involving radioactive material;
- B. Radioactive materials packages which have been damaged or are suspected of being contaminated;
- C. Lost or stolen sources;
- D. Spills or releases of radioactive materials.

Any of the above may result in radiation exposure to personnel, as well as contamination of personnel, equipment or the environment.

Any person who receives an initial call regarding a radiological incident should:

- I. Obtain as much of the following information as possible:
 - a. Name, address and telephone number of person calling.
 - b. Exact location and time of incident.
 - c. Shipper (name, address and telephone number).
 - d. Consignee (name, address and telephone number).
 - e. Carrier (name, address and telephone number).
 - f. Isotope.
 - g. Amount.
 - h. Physical state.
 - i. Sole use or mixed cargo vehicle.
 - j. Size, number and condition of containers.
 - k. Label or placard data and papers.
 - l. Transport index.
 - m. Names and telephone numbers of other persons notified and persons who might provide additional information.

- n. Injuries.
 - o. Isolation and security of source or area.
 - p. Other assistance at the scene or enroute.
 - q. Description of incident.
- II. Provide instructions for emergency personnel at the scene. Instructions will usually include:
- a. Isolate the area and control access.
 - b. Do not attempt to clean-up or move anything except for life saving purposes or emergency care of personnel.
 - c. Obtain names, addresses and telephone numbers of all persons who were involved in the incident in any way.
 - d. Wait for the arrival of technical personnel or further instructions.
- III. Notify the Administrator of the Bureau or the supervisor of the radioactive material program if possible.
- IV. If licensed material is involved, notify the NRC or DOE, as appropriate.
- V. Notify SEMA.
- IV. If Bureau personnel are needed at the scene and supervisory personnel are not available for further instructions, collect the appropriate instruments and equipment and proceed to the scene. Contact the person in charge, verify initial information and evaluate the situation including visual inspection, radiation measurements and determination regarding contamination. Proceed as professional judgment and good health physics practices dictate. If assistance is needed, it may be requested from the NRC or the DOE.
- VII. Refer any questions from the news media to the Administrator of the Bureau if possible. When this is not possible, any information given to the news media should be factual and concise.
- VIII. Inform Deputy Director or Director of the Division of Health.
- IX. Prepare complete and detailed report.

In the event of an emergency at a fixed nuclear facility, the procedures contained in the Missouri Nuclear Accident Plan will be followed.

In case of nuclear warfare, key personnel of the Bureau will be assigned to the State Emergency Operations Center. They will assist in evaluation and assessment, interpretation of data, deployment of monitoring personnel and, to the extent possible, formulation of recommendations for protective or remedial actions.

PIPELINE LEAK

1. Disaster Situation: Pipeline Leak

2. Lead Program Area Within the Division of Health: Bureau of Environmental Epidemiology

3. Contact Person:

James Kountzman	314/751-2713	314/635-6596
Brent Mattox	314/751-2713	314/634-3123
John Crellin	314/751-2713	314/893-6237

4. Other Program areas Within Division of Health having Input and Concern:

Section of Local Health Services
Section of Laboratory Services

5. Steps to be taken by field personnel (those individuals on the scene of the pipeline leak, i.e., local sanitarians, district health personnel, etc.):
 - A. Characterize the hazards that exist or potentially exist affecting the public health and the environment.

 - B. Verify existing information and/or obtain the following data about the incident.
 - I. Location and name of pipeline
 - II. Time of incident
 - III. Cause of incident
 - IV. Quantity of substance involved
 - V. Type of substance; physical state
 - VI. Any known related injuries, symptoms or health effects of incident
 - VII. Names and telephone numbers of other persons notified and persons who might provide additional information
 - VIII. Any assistance at the scene or enroute
 - IX. Description of the incident

 - C. Evaluate the need for prompt mitigation action - Do not attempt to sample the substance involved. Keep yourself and others away from the site.

 - D. Contact the Bureau of Environmental Epidemiology and await further instructions.

BUREAU OF ENVIRONMENTAL EPIDEMIOLOGY

INTERNAL DISASTER RESPONSE: PIPELINE LEAKS

Steps to be taken by Bureau of Environmental Epidemiology

- A. Obtain and verify existing information.
 - 1. Name, address, and phone number of notifier
 - 2. Location of incident (near populated areas, private drinking water wells) and name of pipeline
 - 3. Time of incident
 - 4. Cause of incident
 - 5. Quantity of substance involved
 - 6. Type of substance leaking; physical state
 - 7. Known related injuries, symptoms or health effects of incident
 - 8. Names and telephone numbers of other persons notified and other persons who might provide additional information
 - 9. Any assistance at the scene or enroute
 - 10. Provide a full description of the incident
- B. Contact Missouri Department of Natural Resources
Duty Officer 314/634-2436.
- C. Contact Director of Bureau of Environmental Epidemiology
John R. Crellin, Ph.D.
- D. Determine need for sampling:
 - 1. Identification of contaminants and concentrations
 - 2. Identification of endangered private drinking water wells.
- E. Sample:

Obtain appropriate sample analysis.
- F. Assess health effects and appropriate precautions.
- G. Notify DNR and Section of Local Health of health effects and appropriate precautions, status, and any necessary actions.
- H. Monitor situation.
- I. Make a written report: Complete Missouri Division of Health Environmental Health Emergency Response Report. File with Bureau Director and forward to affected agencies.
- J. Review incident and revise SOP's as warranted.

SINKHOLE

1. Disaster Situation: Sinkhole
2. Lead Program Area Within the Division of Health: Section of Local Health Services
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107
George Thomas	314/751-2017	314/635-0566
Jane Dey	314/751-2115	314/636-5371
4. Other Program areas Within Division of Health having Input and Concern:

Bureau of Community Sanitation

Erwin Gadd	314/751-3696	314/893-3622
	or	417/532-2421

Section of Epidemiology Services

Dr. Denny Donnell	314/751-2713	314/442-8407
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Section of Laboratory Services

Dr. Elmer Spurrier	314/751-3334	314/365-5567
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Sinkholes can create both problems of public health but also public safety. Efforts should be made early to barricade the sinkhole to prevent humans and animals from falling in or otherwise be injured. Efforts to prevent waste disposal in the sinkhole needs immediate attention. Monitoring of waters in and around the sinkhole is indicated in sentinel wells for alerts of conditions of pollution of drinking water supplies.

5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.

- D. Obtain details of situation, i.e., location, time, number/area involved, severity/casualty of situation, etc.
- E. Contact other Division of Health personnel needed for response.
(See Number 4)
 - I. Call District Health Office and outline status of situation.
 - II. District Office contacts local health unit to establish communication linkage and secure latest assessment of the situation.
 - III. Local Health assists district offices and local units to prepare to respond to the situation.
- E. Contact immediate supervisor in chain of command.
- F. Initiate response activities as outlined below:
 - I. District Office initiates process to determine water drainage patterns and rate of flow.

GEOLOGY AND LAND SURVEY DIVISION -- Roll

Local (off net)	314/364-1752
Tie line (on net)	837-4082

GROUND WATER SECTION

Don Miller	314/364-7278 (Home)
Tim Vandike	314/364-6704 (Home)

CHIEF ENGINEERING GEOLOGY

Tom Dean	314/364-3419 (Home)
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- II. Notify Department of Natural Resources.

DIVISION OF ENVIRONMENTAL QUALITY, LAB SERVICES

Dean Martin	314/634-2436 (24-hour emergency number)
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- G. Make written report/notes of notification and situation immediately with date and time (24 clock hours). Include observations and recommendations on adequacy of Standard Operating Procedure.

HEAVY SNOW

1. Disaster Situation: Heavy Snow
2. Lead Program Area Within the Division of Health: Section of Local Health Services
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107
George Thomas	314/751-2017	314/635-0566
Jane Dey	314/751-2115	314/636-5371
4. Other Program areas Within Division of Health having Input and Concern: Bureau of Community Sanitation

Erwin Gadd	314/751-3696	314/893-3622
	or	417/532-2421

Snow becomes a health issue when it affects food, water, lodging, the ability to secure these or the contamination of these. Immediate efforts need to be implemented to insure adequate supplies for all concerned. Media announcements need to be initiated to warn citizens of dangers of heart attacks from over-exertion such as shoveling snow, melted snow can be contaminated, hypothermia dangers, frostbite and the use of sunglasses to prevent snow blindness and safer driving conditions, etc. Food stuffs in transit but stranded by the storms need to be evaluated to determine salvageability.

5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Obtain details of situation, i.e., location, time, number/area involved, severity/casualty of situation, etc.

When food stuffs in transit or in local facility appear to be potentially contaminated by exposure or thawing see Page 57.
Embargo and detention of food, drugs and cosmetics in disaster and emergency situations.

- D. Contact other Division of Health personnel needed for response.
(See Number 4)

I. Call District Health Office and outline status of situation.

- II. District Office contacts local health unit to establish communication linkage and secure latest assessment of the situation.
- III. Local Health assists district offices and local units to prepare to respond to the situation.
- E. Contact immediate supervisor in chain of command.
- F. Initiate response activities as outlined below:
 - Local units or district offices when necessary to:
 - I. Determine need for emergency food, water, fuel, and lodging.
 - II. Determine means to transport stranded persons to emergency resources or to transport emergency food, water and fuel to stranded persons.
 - III. When circumstances indicate, notify Departments of Agriculture and Conservation of conditions concerning domestic animals and wildlife.
 - IV. Initiate media blitz in stricken area with approved public service announcements.
- G. Make written report/notes of notification and situation immediately with date and time (24 hours clock). Include observations and recommendations on adequacy of Standard Operating Procedures.

TRANSPORTATION INCIDENTS

1. Disaster Situation: Transportation Incidents involving Hazardous Materials
2. Lead Program Area Within the Division of Health: Bureau of Environmental Epidemiology
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Brent Mattox	314/751-2713	314/634-3123
James Kountzman	314/751-2713	314/635-6596
Dr. John Crellin	314/751-2713	314/893-6237
4. Other Program areas Within Division of Health having Input and Concern:
5. Steps to be taken, in priority order, are:
 - A. Keep all personnel and civilians at least 100 feet away from vehicle or further, if emission is visible or odors are present.
 - B. Obtain shipping papers from cab of truck, conductor, or pilot house using self-contained breathing apparatus and protective clothing, if warranted. DO NOT ATTEMPT TO OBTAIN PAPERS IF RISK OF EXPOSURE IS GREAT OR PROPER EQUIPMENT IS UNAVAILABLE. (Shipping papers contain information such as; the carrier, manufacturer, composition of load, and consignee.)
 - C. If papers are unavailable, note any external markings or numbers (i.e., placards, DOT numbers, carrier's name, license plate numbers). This should be done from a distance using binoculars, if necessary.
 - D. Call the Bureau of Environmental Epidemiology and give the following information, if available:
 - I. Name of caller and call back number
 - II. Nature and location of the incident
 - III. Shipper or manufacturer
 - IV. Container type
 - V. Rail car or truck number
 - VI. Carrier name
 - VII. Consignee
 - VIII. Local conditions
 - IX. Any placard numbers or other identifiers
 - E. Make every effort to keep a phone line open to receive information.

Bureau of Environmental Epidemiology

INTERNAL DISASTER RESPONSE: Transportation Accidents

1. Disaster Situation: Transportation Incidents involving Hazardous Materials
2. Lead Program Area Within the Division of Health: Bureau of Environmental Epidemiology
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Brent Mattox	314/751-2713	314/634-3123
James Kountzman	314/751-2713	314/635-6596
Dr. John Crellin	314/751-2713	314/893-6237
4. Other Program areas Within Division of Health having Input and Concern: Section of Local Health Services
5. Bureau responses in priority are:
 - A. If incoming call is from Department of Natural Resources, get the nature and location of the incident and the chemicals involved.
 - B. If incoming call from field, take down the following:
 - I. Name of caller and call back number
 - II. Nature and location of the incident
 - III. Shipper or manufacturer
 - IV. Container type
 - V. Rail car or truck number
 - VI. Carrier name
 - VII. Consignee
 - VIII. Local conditions
 - IX. Any placard numbers or identifiers
 - C. When an identifier, such as a placard number is given, refer to the Hazardous Materials Emergency Response Guidebook for identification. Supply immediately any information applicable to that chemical discussed in the Guidebook. Give caller Chemtrec number: TOLL FREE 800/424-9300.
 - D. If the chemical is unknown, use available information to determine its nature by contacting any entities known (shippers, consignee, etc.) or by contacting the Department of Natural Resources for assistance.
 - E. Contact John R. Crellin, Ph.D. and inform of situation.

- F. After determining name, compile toxicological data from available sources.
- G. Verify situation by contacting field personnel or by onsite visit.
- H. disseminate compiled data using professional judgement to determine applicability to the particular situation.
- I. Make written report/notes of notification and situation immediately with date and time.

TORNADO/HIGH WINDS

1. Disaster Situation: Tornado/High Winds
2. Lead Program Area Within the Division of Health: Section of Local Health Services
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Billy Rikard	314/751-3405	314/893-3107
George Thomas	314/751-2017	314/635-0566
Jane Dey	314/751-2115	314/636-5371
4. Other Program areas Within Division of Health having Input and Concern:

Bureau of Community Sanitation

Erwin Gadd	314/751-2713	314/893-3622
	or	417/532-2421

Bureau of Emergency Medical Services

Ken Cole	314/751-2713	314/636-5590
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Bureau of Veterinary Public Health

Dr. F.T. Satalowich	314/751-2713	314/442/8747
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Immediate response is indicated when tornadoes and excessively damaging high winds occur in populated areas. Insomuch as these occur with little or no warning, rapid mobilization of local health resources in District Health Offices and local units is mandated to provide immediate public health efforts as soon as the tornado has passed or the high winds have subsided. Care should be given in avoiding electrical wires and equipment damaged during the storm.

Immediate care and then the evacuation of the injured to medical care centers is of immediate concern.

5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.

- D. Obtain details of situation, i.e., location, time, number/area involved, severity/casualty of situation, etc.
- E. Contact other Division of Health personnel needed for response.
(See Number 4)
 - I. Call District Health Office and outline status of situation.
 - II. District Office contacts local health unit to establish communication linkage and secure latest assessment of the situation.
 - III. Local Health assists district offices and local units to prepare to respond to the situation.
- E. Contact immediate supervisor in chain of command.
- F. Initiate response activities as outlined below:

Local unit or when necessary the district office to:

 - I. Determine availability of emergency medical services.
 - II. Determine need for local health resources and make contacts.
 - III. Determine through review availability of safe water, food and drugs.
 - IV. When indicated, establish emergency drinking water and food supplies.
 - V. Establish emergency controls on controlled substances.
 - VI. Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley, Phone: 751-3371.
- G. Make written report/notes of notification and situation immediately with date and time (24 hours clock). Include observations and recommendations on adequacy of Standard Operating Procedures.

BIOLOGICAL WARFARE

1. Disaster Situation: Biological Warfare
2. Lead Program Area Within the Division of Health: Bureau of Communicable Diseases
Section of Epidemiology Services
3. Contact Person:

<u>Name</u>	Office Phone	Home Phone
Margaret Spurrier	314/751-2713	314/365-5567
Dr. Denny Donnell	314/751-2713	314/442-8407
Pat Mott	314/751-2713	816/273-2111
4. Other Program areas Within Division of Health having Input and Concern: Section of Laboratory Services
314/751-3334
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Initially laboratory testing and epidemiologic analyses may be helpful in identifying the agent and route of dissemination. Similar information and activities as described under HUMAN DISEASE EPIDEMIC would be appropriate. The affected population may be huge and area very extensive. Missouri could be the first area affected but more than likely would not be the first and some advance information may be available.

 If no prior warning, initial information required will be identical to that request under HUMAN DISEASE EPIDEMIC.

 If prior warning, then proceed to step G.
 - E. Contact other Division of Health personnel needed for response, e.g., laboratory.
 - F. Contact immediate supervisor in chain of command.
 - G. When it is recognized that Missouri may be affected by biological warfare, there will be need for data but greater need for handling of mass casualties with logistical support for medical supplies and

implementation of control measures on massive scale. Liaison with defense agencies will also be important.

- I. Establish a system of data flow from all jurisdictions via district offices on a daily basis to provide information on number of cases, hospitalizations, and deaths known for that day. This will involve development of a standard case definition and could include some details regarding age and other characteristics of the cases.
 - II. Arrange for testing of lab specimens from a few cases in each district to monitor possible variation in agent or possibility of multiple agents involved in the dispersal.
 - III. Control measures should be developed in liaison with national authorities. They may involve massive immunization or chemoprophylaxis, extensive quarantine or other forms of restriction of movement, environmental measures or embargo of certain food products.
 - IV. Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley, Phone: 751-3371.
- H. Make written report/notes of notification and situation immediately with date and time (24 clock hours). Include observations and recommendations on adequacy of Standard Operating Procedures.

Section of Epidemiology Services

INTERNAL DISASTER RESPONSE: Biological Warfare

1. Standard Order of Procedure for Biological Warfare
2. Responsible Lead Program is Bureau of Communicable Diseases, Section of Epidemiology Services
3. Contact persons, in priority order, are:

Margaret Spurrier, Director, Communicable Disease Program, Phone:
314 751-2713 (314 365-5567 Home)

H. Denny Donnell, Jr., M.D., M.P.H., Director, Section of Epidemiology
Services, Phone: 314 751-2713 (314 442-8407 Home)

Patricia Mott, R.N., Director, Nosocomial Disease Program, Phone:
314 751-2713 (816 273-2111 Home)
4. Other Division of Health program/activities to be notified are:

Section of Laboratory Services
5. Steps to be taken, in priority order, are:
 - A. Confirm identity of notifier.
 - B. Confirm situation.
 - C. Obtain name and phone number of notifier.
 - D. Initially laboratory testing and epidemiologic analyses may be helpful in identifying the agent and route of dissemination. Similar information and activities as described under HUMAN DISEASE EPIDEMIC would be appropriate. The affected population may be huge and area very extensive. Missouri could be the first area affected but more than likely would not be the first and some advance information may be available.

If no prior warning, initial information required will be identical to that request under HUMAN DISEASE EPIDEMIC.

If prior warning, then proceed to step G.
 - E. Contact other Division of Health personnel needed for response, e.g. laboratory, etc.
 - F. Contact immediate supervisor in chain of command.
 - G. When it is recognized that Missouri may be affected by biological war-

fare, there will be need for data but greater need for handling of mass casualties with logistical support for medical supplies and implementation of control measures on massive scale. Liaison with defense agencies will also be important.

- i. Establish a system of data flow from all jurisdictions via district offices on a daily basis to provide information on number of cases, hospitalizations, and deaths known for that day. This will involve development of a standard case definition and could include some details regarding age and other characteristics of the cases.
 - ii. Arrange for testing of lab specimens from a few cases in each district to monitor possible variation in agent or possibility of multiple agents involved in the dispersal.
 - iii. Control measures should be developed in liaison with national authorities. They may involve massive immunization or chemoprophylaxis, extensive quarantine or other forms of restriction of movement, environmental measures or embargo of certain food products.
- H. Make written report/notes of notification and situation immediately with date and time (24 hours clock).

CHEMICAL WARFARE

1. Disaster Situation: Chemical Warfare
2. Lead Program Area Within the Division of Health: Bureau of Environmental Epidemiology
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Brent Mattox	314/751-2713	314/634-3123
James Kountzman	314/751-2713	314/635-6596
Dr. John Crellin	314/751-2713	314/893-6237
4. Other Program areas Within Division of Health having Input and Concern:
5. Steps to be taken, in priority order, are:
 - A. Avoid contact with suspected contaminated materials or areas.
 - B. Call the Bureau of Environmental Epidemiology and report the following:
 - I. Name and call back number
 - II. Any fatalities and their symptoms and time frame between onset and death.
 - III. Any symptoms and number of affected individuals.
 - IV. Any animal illness.
 - V. Any suspected sources of exposure.
 - C. Make every effort to keep a phone line open to receive information.
 - D. Insure proper registration of dead for vital statistics.
Vital statistics contacts: Gary Shipley, Phone: 751-3371.

Bureau of Environmental Epidemiology

INTERNAL DISASTER RESPONSE: CHEMICAL WARFARE AGENTS

1. Disaster Situation: Chemical Warfare
2. Lead Program Area Within the Division of Health: Bureau of Environmental Epidemiology
3. Contact Person:

<u>Name</u>	<u>Office Phone</u>	<u>Home Phone</u>
Brent Mattox	314/751-2713	314/634-3123
James Kountzman	314/751-2713	314/635-6596
Dr. John Crellin	314/751-2713	314/893-6237
4. Other Program areas Within Division of Health having Input and Concern:
5. Bureau responses in priority order are:
 - A. Obtain from reporting source the following:
 - I. Name and call back number
 - II. Fatalities, noting symptoms and time between onset and death
 - III. Any animal illness
 - IV. Any suspected sources of exposure
 - V. Any symptoms and number of affected individuals
 - B. Contact John R. Crellin, Ph.D.
 - C. Contact Fort Leonard Wood for instructions, Chief of Plans, Operations and Training (phone 314/368-9471)
 - D. Sample, if requested, and transport to appropriate laboratory.
 - E. Upon identification, compile toxicological data.
 - F. Disseminate data using professional judgement to link it to the situation.
 - G. Make written report/notes of notification and situation immediately with date and time.

APPENDIX A

I. Water Sampling

A bacteriological water sample should be taken from a smooth-nosed cold water tap if possible. Avoid collecting the samples from a frostproof hydrant, frost-proof faucet, or from hot-cold mixing faucets since it is not practical to sterilize these fixtures. Ship the sample IMMEDIATELY after collection. This is important, because water samples should be in transit no more than thirty hours if bacteriological findings are to be accurate.

- (1) Allow the water to run full open approximately one minute or until the service line has been thoroughly flushed.
- (2) Flame-sterilize the tap from its nose to the valve, being certain that the open end has been well heated.
- (3) Turn on the water and adjust the stream to a gentle flow. Do not rinse the container.
- (4) The sample containers are sterile and ready for use when shipped. DO NOT RINSE THE CONTAINER. A LOOSE CAP DOES NOT AFFECT STERILITY.
- (5) Grasp cap along top edge and remove. Do not touch inside of cap or neck of bottle and do not attempt to clean or rinse the bottle.
- (6) Hold bottle so that the water entering it will not pass over your hands. Allow water to flow smoothly from pump or tap and fill the bottle to about one-half inch of top (or to the black line on some bottles.)
- (7) Replace cap on bottle and tighten cap securely.

APPENDIX B

I. Emergency Disinfection

- (1) Boiling. Vigorous boiling for one full minute will kill any disease-causing bacteria present in water. The flat taste of boiled water can be improved by pouring it back and forth from one container into another, by allowing it to stand for a few hours, or by adding a small pinch of salt for each quart of water boiled.
- (2) Chemical Treatment: When boiling is not practical, chemical disinfection should be used. The chemical most commonly used for disinfection is chlorine.
 - (a) Chlorine Bleach. Common household bleach contains a chlorine compound that will disinfect water. The procedure to be followed is usually written on the label. When the necessary procedure is not given, one should find the percentage of available chlorine on the label and use the information in the following tabulation as a guide:

AVAILABLE CHLORINE ¹	DROPS PER QUART OF CLEAR WATER ²
1%	10
4-6%	2
7-10%	1

¹If strength is unknown, add 10 drops per quart to purify.

²Double amount for turbid or colored water.

The treated water should be mixed thoroughly and allowed to stand for thirty minutes. The water should have a slight chlorine odor; if not, repeat the dosage and allow the water to stand for an additional fifteen minutes. If the treated water has too strong a chlorine taste, it can be made more palatable by allowing the water to stand exposed to the air for a few hours or by pouring it from one clean container to another several times.

- (b) Chlorine Tablets. Chlorine tablets containing the necessary dosage for drinking water disinfection can be purchased in a commercially prepared form. These tablets are available from drug and sporting goods stores and should be used as stated in

the instructions. When instructions are not available, use one tablet for each quart of water to be purified.

APPENDIX C

I. Well Disinfection

- (1) Disinfect the water supply and distribution system in accordance with the following general procedure:
 - (a) Introduce the prescribed amount of disinfectant (chlorine) into the well. (For regular household bleach, one gallon per 1,000 gallons of water.)
 - (b) Open all faucets in the distribution system and let the water run until a distinct chlorine odor is noted.
 - (c) Turn off all faucets and allow the water to stand in the system for at least four hours, or preferably overnight.
 - (d) Open the faucets and allow the water to run until a suitable level of chlorine is reached (approximately 0.5 parts per million) or until no chlorine odor is present.
- (2) In approximately five to seven days, resample the supply and submit it to the Division of Health Laboratory. Remember that "questionable" sample results may arise from an improper sampling point. A mixing-type faucet, faucet with an aerator, drain-back yard hydrant, or frostproof faucet will almost invariably produce confluent or "questionable" results. The sampling point should be a single cold-water faucet with the shut-off valve near the spout opening. (Follow closely the directions in the sample bottle container.) If the sample is not taken from the proper point and results are reported "questionable," it could mean that the water supply is perfectly satisfactory but contamination was introduced at the point of collection.

Transit time greater than thirty hours from the time of collection could possibly be another explanation for the high bacteria count. Samples should have first-class postage to assure fast delivery.

- (3) Initial "unsafe" or "questionable" results should be followed up with two consecutive safe samples taken on a weekly basis after disinfection of the water supply. "Unsafe" or "questionable" results obtained after proper disinfection may indicate that contamination is entering the supply due to insufficient casing depth, absence of seals or improper seals at the bottom and top of the casing, rust holes in the casing, etc, which can only be corrected by reconstructing the well.

APPENDIX D

Embargo and Detention of Food, Drugs, and Cosmetics

The Division of Health is charged with the responsibility of removing from the market any misbranded or adulterated food, drugs, cosmetics, or devices. Section 196.030, Missouri Revised Statutes (1978), specifies the legal procedures to be followed in performing an embargo and obtaining condemnation of a product. Only district health officers, deputized county health officers, environmental sanitarians of the Division of Health, and selected deputized employees of city and county health departments are authorized to conduct embargo procedures and seek condemnation of misbranded or adulterated products. Authorization is by letter, originating at the district health office. Such letters must be kept on file by the local agency. City and county health department employees not specifically authorized to make embargo actions should request assistance from the Division of Health district offices.

All food, drugs, cosmetics, or devices suspected of being adulterated or misbranded are to be affixed with red tags, Form E1.23, by personnel authorized to perform embargo actions. This tag prevents the suspected item from being sold or transported until such time as adulteration or misbranding is confirmed and condemnation proceedings started. Division of Health Form E6.11, "Goods Embargoed or Goods Condemned as Unfit for Human Consumption," is to be completed. This form constitutes an inventory of the items being held. Both forms are to be signed by the person performing the action; and, if possible, the owner or responsible person concerned with the product should be requested to sign the embargo form. Signature of the owner, however, is not necessary. Sufficient copies of Form #6.11 should be made for distribution to the owner of the goods listed, the county, district, and central office records.

Particular note should be taken of the three-day time period which pertains to perishable items. The statutes provide that perishable items shall be destroyed or released within a three-day period. Nonperishable items may remain under embargo until such time as destruction is permitted or ordered by the court or until a release is ordered by the Division of Health or by the court.

APPENDIX E

Mass Feeding

The first and most important thing to consider in an emergency mass feeding situation is to obtain a safe supply of both food and water.

To check the safety of a food supply in an emergency or disaster situation, refer to the following:

- (1) Commercially canned foods -- Check condition of cans for signs of swelling. You should reject any cans that have bulged top or bottom; severed, sharp dents on top, bottom, or side seams; and any can that is rusted beyond surface rust.
- (2) Home canned, low-acid foods (corn, beans, meats, tomatoes should be avoided, if possible. If not possible, check jar for appearance (broken seals, mold growth, cracks, and heavily rusted lids). If any of these conditions exist, do not use the food under any conditions. Otherwise, bring the food to a boil for fifteen minutes before serving.
- (3) Fresh vegetables and fruits -- Check for visible spoilage. If there is none, wash it with potable water (safe for drinking) and prepare. If spoilage is found, remove from the remaining supply before preparing.
- (4) Fresh meat
 - A. First, check for obvious spoilage and damage off color, odor). If questionable, do not use.
 - B. Check the temperature of meat. Temperature should be 45° F or cooler.
 - C. If temperature of meat is between 45° F and 55° F, cook thoroughly and serve immediately.
- (5) Frozen foods (vegetables and fruits)
 - A. Check for visible damage and signs of being thawed and refrozen.
 - B. If not visibly damaged, thaw and cook thoroughly.
- (6) Frozen meats
 - A. Check for visible damage or spoilage.
 - B. If condition of meat is sound, thaw in a manner that allows meat to thaw evenly throughout, such as:
 1. Running water (not over 70° F);
 2. Under refrigeration;

3. In an oven, as part of the cooking process;
 4. Cook on grill, as part of cooking process;
 5. Cook in microwave oven (if to be continuously cooked in that oven or other oven);
 6. If nothing else is available, thaw in an insulated container.
- C. It is important to remember that the outside of large pieces of meat can spoil before the inside can thaw.
- D. If meat has an off odor after thawing, do not use.

The next important thing to consider is the manner in which the food is prepared and the facilities to prepare it and serve it.

- (1) The most important factors of food preparation are time and temperature control.
- A. Store all potentially hazardous food (those foods containing meat, eggs, fish, poultry, dairy products) at temperatures of either 45° F and 140° F any longer than possible.
 - B. When preparing potentially hazardous food, rapidly heat, reheat, or cool the product so that it is not between the temperatures of 45° F and 140° F any longer than possible.
 - C. If facilities are not available for maintaining product temperatures after prepared, hold no longer than four hours after preparation.
 - D. Cook all poultry to a temperature above 165° F.
 - E. Cook pork to a temperature above 150°F.
 - F. Cook beef to a temperature above 140° F.
 - G. Use shallow containers when storing food, if possible. If not possible, agitate food so that it either cools or heats rapidly.
 - H. Always wash hands before preparing foods and after visiting the restroom, and anytime they become soiled.
 - I. Wear clean clothes when preparing food.
 - J. Avoid cross-contamination of foods. Keep prepared foods separated from raw foods.

(2) Facilities for preparation and serving for mass feeding

- A. If possible, holding units should be available to keep all potentially hazardous foods below 45° F before preparation and 140° F after cooking, if necessary.
- B. Containers with covers need to be provided to keep food products from becoming contaminated from dust, insects, and rodents.
- C. Cooking areas and preparation areas should be roofed and screened, if possible.
- D. Utensils should be washed, rinsed, and sanitized with chlorine solution (50 to 200 ppm) (one-fourth cup chlorine bleach to five gallons of water) for one minute, or use any sanitizer approved by EPA for food-contact surfaces and use according to directions.
- E. If facilities are limited, at least put under roof and screening the preparation area, with cooking outside.
- F. Have facilities for handwashing, with heated water, soaps, and preferably paper towels.
- G. Locate facilities away from any sewage discharge or outdoor privies.

APPENDIX F

Steps in a Foodborne Disease Investigation

1. Establish the existence of an epidemic.
 - a. Greater than the expected number of cases?
2. Verify the diagnosis.
3. Make a quick survey of known cases and the community situation.
4. Formulate tentative hypotheses.
5. Plan a detailed epidemiological investigation.
 - a. Person, place, time.
 - b. Interviews.
 - c. Attack rates.
 - d. Laboratory specimens.
6. Conduct the investigation.
7. Analyze data.
 - a. Line listing.
 - b. Epidemic curve.
 - c. Sex, age graphs.
 - d. Rates.
8. Test hypotheses.
 - a. Statistical analysis.
9. Formulate conclusions.
10. Put control measures into operation.
11. Make report.

Foodborne Investigational Procedures

1. Foodborne disease investigation preparation:

A. First step in advance preparation for such an event is to have a foodborne investigation kit prepared and maintained with the following equipment:

1. Sterile sample containers -- Plastic bags (disposal or Whirl-Pak type), wide-mouth jars (six-ounce to one-quart capacity) with screw caps, water sample bottles (bottles for chlorinated water should contain enough sodium thiosulfate to provide a concentration of 100 mg of this compound per ml of sample), foil or heavy wrapping paper (wrapped), metal cans.
2. Sterile and wrapped sample collection implements -- spoons, scoops, tongue-depressor blades, butcher knife, forceps, tongs, spatula, drill bits, metal tubes (one-half to one inch in diameter, one to two feet long), pipets, scissors, swabs, Moore swabs (compact pads of gauze, made from four feet by six-inch strip, tied in center with a long, stout twine or wire -- for sewer, drain, stream, pipeline samples).
3. Specimen collecting equipment -- Cartons (with lids for stool specimens, bottles containing a preservative and transport solution, stool specimen protective cannisters and cartons, sterile swabs, rectal swab outfits, sterile four-inch square guaze pads, tubes or transport media.
4. Supporting equipment -- Bayonet-type (meat) thermometer 0 to 220° F (-17.8 to 104°C) at least 5 inches long, preferably eight inches long, in protective case; bulb-type thermometer 1 to 220 F. (-17.8 to 104 C) in protective case; fine-point felt-tip marking pen, roll of adhesive or masking tape, labels, waterproof cardboard tags with eyelet and wire ties, flash light, electric drill, matches, 0.1 percent peptone water or buffered distilled water (5 ml in screw capped tubes), test tube rack, insulated chest, investigational forms.
5. Sterilizing agents -- 95 percent ethyl alcohol. propane torch.
6. Refrigerants -- Canned ice, refrigerant in plastic bags, liquid in cans, rubber or plastic bags which can be filled with water and frozen, heavy-duty plastic bags for ice.
7. Clothing

White laboratory coat, paper hats, disposable plastic gloves, disposable plastic boots. (These are optional.)

At least fifteen sterile plastic bags or wide mouth jars, fifteen sterile spoons, six specimen collection containers or devices, and one each of the supporting equipment and sterilizing equipment should be preassembled in a kit which is kept in the agency responsible for investigation of foodborne illness.

- B. Develop a checklist and maintain a schedule for the kit to ensure sterility and completeness.
 - C. Use following sterilization and disinfection methods for implements and containers:
 1. Laboratory
 - a. Autoclave at 121° C (250° F) for 15 minutes (all materials containing water or likely to be damaged by dry heat).
 - b. Exposure to 170 C (338 F) air in over for one hour.
 - c. Exposure to ethylene oxide with carbon dioxide (for plastic).
 2. Field
 - a. Expose to steam at 100 C (212 F) for 1 hour in enclosed chamber.
 - b. Flame thoroughly with propane torch or Bunsen burner.
 - c. Immerse in 95 percent alcohol and flame (spores may survive);
 - d. Wash and then immerse in boiling water (spores may survive).
 - e. Wash, rinse, immerse for at least thirty seconds in solution containing solute equivalent to not less than 100 ppm hypochlorite, rinse in sterile water; if necessary, wipe dry with sterile cloth (spores may survive).
 - D. Become familiar with steps used in Procedures to Investigate Foodborne Illness.
2. Foodborne disease investigation when the suspected foodborne disease is the emergency:
 - A. Follow procedures outlined in Procedure to Investigate Foodborne Illness.
 3. Foodborne disease investigation in a disaster situation where laboratory, medical, and public health support are not available:
 - A. Interview as many persons as possible (both sick and well) that were exposed to suspected meal.

1. For those who were ill, use an investigation form to record the symptoms.

As a person describes his illness, check boxes adjacent to appropriate symptoms on Form B. Do not ask about all symptoms listed; but if the ill person does not mention those marked with an asterisk, ask about them. You may have to explain some symptoms to the patient in terms he can understand. The symptoms in the first column of Form B are usually associated with poisoning or intoxication. Those in the second column are usually associated with an enteric infection. Those in the third column are usually associated with a generalized infection, and those in the fourth column are usually associated with a disturbance of the central nervous system. Diseases in any category will sometimes be characterized by a few signs and symptoms listed in other columns. If an illness seems to fall into one of these categories, mention other symptoms in the category and record the patient's response. Review known allergies, recent immunizations, recent changes in the patient's medical history, and similar information.

Gather information about all the meals and snacks eaten seventy-two hours before onset of illness. The food, even the meal, which precipitated the illness might not be obvious. The type of illness will sometimes give a clue. If the first and predominant symptoms are nausea and vomiting, concentrate questions on foods that have been most recently eaten. If the first and predominant symptoms are diarrhea and abdominal cramps, be suspicious of foods eaten six to twenty hours before onset of illness. If diarrhea, chills, and fever predominate, be suspicious of foods eaten twelve to seventy-two hours before onset of illness. Remember, these suggestions relate to common foodborne illnesses. The more unusual illnesses often present different clinical patterns. For instance, some illnesses -- such as typhoid fever and hepatitis A -- have incubation periods greater than seventy-two hours.

2. Using information gathered about the illness, compare with symptoms of diseases on disease-chart (attached) to determine type of bacteria, the suspect meal, common food source between those ill (the food that was eaten by those sick and not by those who are well).

A. GO to place where suspect food was prepared.

1. Interview food workers about food preparation process. Determine where food could have been abused (potentially hazardous foods contain whole or in part meats, fish, poultry, dairy products, eggs, and must be stored at temperatures of 45 F or below or 140 F or above and cannot be between these temperatures for longer than four hours).

2. Examine food workers. Look for pimples, minor skin inflammation, boils, infected cuts, burns. Ask about their general health to determine if they could have transmitted diseases through the food.
3. Once the food preparation method, food source, or worker responsible can be reasonably determined, eliminate it or them from the food preparation process.

34 *Illnesses attributed to foods: A classification by symptoms, incubation periods, and types of agents*^{1,2}

Disease	Etiologic agent and source	Incubation or latency period	Signs and symptoms	Foods involved ^d	Specimens to collect	Factors that contribute to foodborne outbreaks
UPPER GASTROINTESTINAL TRACT SIGNS AND SYMPTOMS (NAUSEA, VOMITING) OCCUR FIRST OR PREDOMINATE						
Incubation (Latency) Period Usually Less Than 1 Hour						
<i>Fungal Agents</i>						
Gastrointestinal irritating-group mushroom poisoning	Possibly resin-like substances in some mushrooms	30 minutes to 2 hours	Nausea, vomiting, retching, diarrhea, abdominal cramps	Many varieties of wild mushrooms	Vomit	Eating unknown varieties of mushrooms, mistaking toxic mushrooms for eatable varieties
<i>Chemical Agents</i>						
Antimony poisoning	Antimony in gray enamelware	Few minutes to 1 hour	Vomiting, abdominal pain, diarrhea	High-acid foods and beverages	Vomit, stools, urine	Purchasing antimony-containing utensils, storing high-acid foods in gray enamelware
Cadmium poisoning	Cadmium in plated utensils	15 to 30 minutes	Nausea, vomiting, abdominal cramps, diarrhea, shock	High-acid foods and beverages, candy love beads or cake decorations	Vomit, stools, urine, blood	Purchasing cadmium-containing utensils, storing high-acid foods in cadmium-containing containers, ingesting cadmium-containing foods
Copper poisoning	Copper in pipes and utensils	Few minutes to few hours	Metallic taste, nausea, vomiting (green vomit), abdominal pain, diarrhea	High-acid foods and beverages	Vomit, gastric washings, urine, blood	Storing high-acid foods in copper utensils or using copper pipes for dispensing high-acid beverages, faulty backflow preventor valves in vending machines
Fluoride poisoning	Sodium fluoride in insecticides	Few minutes to 2 hours	Salty or soapy taste, numbness of mouth, vomiting, diarrhea, abdominal pain, pallor, cyanosis, dilated pupils, spasms, collapse, shock	Any accidentally contaminated food, particularly dry foods, such as dry milk, flour, baking powder, and cake mixes	Vomit, gastric washings	Storing insecticides in same area as foods, mistaking pesticides for powdered foods
Lead poisoning	Lead in earthenware vessels, pesticides, paint, plaster, putty	30 minutes or longer	Metallic taste, burning of mouth, abdominal pain, milky vomit, bloody or black stools, foul breath, shock, blue gum line	High-acid foods and beverages stored in lead-containing vessels, any accidentally contaminated food	Vomit, gastric washings, stools, blood, urine	Purchasing lead-containing vessels, storing high-acid foods in lead-containing vessels, storing pesticides in same area as food
Tin poisoning	Tin in tinned cans	30 minutes to 2 hours	Bloating, nausea, vomiting, abdominal cramps, diarrhea, headache	High-acid foods and beverages	Vomit, stools, urine, blood	Using uncoated tin containers for storing acid foods
Zinc poisoning	Zinc in galvanized containers	Few minutes to few hours	Pain in mouth and abdomen, nausea, vomiting, dizziness	High-acid foods and beverages	Vomit, gastric washings, urine, blood, stools	Storing high-acid foods in galvanized cans
Incubation (Latency) Period 1 to 6 Hours						
<i>Bacterial Agents</i>						
<i>Bacillus cereus</i> gastroenteritis	(see entry below)					
Staphylococcal intoxication	Exo-enterotoxins A, B, C, D, and E of <i>Staphylococcus aureus</i> . Staphylococci from noses, skin, and lesions of infected humans and animals and from udders of cows	1 to 8 hours, mean 2 to 4 hours	Nausea, vomiting, retching, abdominal pain, diarrhea, prostration	Ham, meat and poultry products, cream-filled pastry, food mixtures, leftover foods	Ill: vomit, stools, rectal swabs Carriers: nasal swabs, swabs of lesions, anal swab	Inadequate refrigeration, workers touching cooked food, preparing foods several hours before serving, workers with infections containing pus, holding foods at warm (bacterial incubating) temperatures, fermentation of abnormally low-acid foods

Chemical Agents⁴

Nitrite poisoning	Nitrites or nitrates used as meat curing compounds or ground water from shallow wells	1 to 2 hours	Nausea, vomiting, cyanosis, headache, dizziness, weakness, loss of consciousness, chocolate-brown colored blood	Cured meats, any accidentally contaminated food, exposed to excessive nitrification	Blood	Using excessive amounts of nitrites or nitrates in foods for curing or for covering up spoilage, mistaking nitrites for common salt and other condiments, inadequate refrigeration
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Incubation (Latency) Period Usually 7 to 12 Hours
Fungal Agents

Cyclopeptide and gyromitrin groups of mushroom poisoning	Cyclopeptides and gyromitrin in some mushrooms	6 to 24 hours	Abdominal pain, feeling of fullness, vomiting, protracted diarrhea, loss of strength, thirst, muscle cramps, feeble rapid pulse, collapse, jaundice, drowsiness, dilated pupils, coma, death	<i>Amanita phalloides</i> , <i>A. verna</i> , <i>Galerina autumnalis</i> , <i>Gyromitra esculenta</i> (false morels) and similar species of mushrooms	Urine, blood, vomitus	Eating certain species of <i>Amanita</i> , <i>Galerina</i> , and <i>Gyromitra</i> mushrooms, eating unknown varieties of mushrooms, mistaking toxic mushrooms for eatable varieties
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SORE THROAT AND RESPIRATORY SIGNS AND SYMPTOMS OCCUR

Incubation (Latency) Period Less Than 1 Hour
Chemical Agents

Sodium hydroxide poisoning	Sodium hydroxide in bottle washing compounds, detergents, drain cleaners, or hair straighteners	Few minutes	Burning of lips, mouth and throat; vomiting, abdominal pain, diarrhea	Bottled beverages	Vomitus	Inadequate rinsing of bottles cleaned with caustic
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Incubation (Latency) Period 12 to 72 Hours
Bacterial Agents

Beta-hemolytic streptococcal infections	<i>Streptococcus pyogenes</i> from throat and lesions of infected humans	1 to 3 days	Sore throat, fever, nausea, vomiting, rhinorrhea, sometimes a rash	Raw milk, foods containing eggs	Throat swabs, vomitus	Workers touching cooked foods, workers with infections containing pus, inadequate refrigeration, inadequate cooking or reheating, preparing foods several hours before serving
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LOWER GASTROINTESTINAL TRACT SIGNS AND SYMPTOMS (ABDOMINAL CRAMPS, DIARRHEA)**OCCUR FIRST OR PREDOMINATE**

Incubation (Latency) Period Usually 7 to 12 Hours
Bacterial Agents

<i>Bacillus cereus</i> gastroenteritis	Exo-enterotoxin of <i>B. cereus</i> , organism in soil	8 to 16 hours; rare reports of 2 to 4 hours	Nausea, abdominal pain, diarrhea; some reports of vomiting	Cereal products, rice, custards and sauces, meatloaf	Stools, vomitus	Inadequate refrigeration, holding foods at warm (bacterial incubating) temperatures, preparing foods several hours before serving, inadequate reheating of leftovers
<i>Clostridium perfringens</i> gastroenteritis	Endo-enterotoxin formed during sporulation of <i>C. perfringens</i> in intestines, organism in feces of infected humans, other animals, and in soil	8 to 22 hours, mean 10 hours	Abdominal pain, diarrhea	Cooked meat, poultry, gravy, sauces, and soups	Stools	Inadequate refrigeration, holding foods at warm (bacterial incubating) temperature, preparing foods several hours before serving, inadequate reheating of leftovers

Incubation (Latency) Period Usually 12 to 72 Hours
Bacterial Agents

Cholera	Endo-enterotoxin of <i>Vibrio cholerae</i> classical and El Tor biotypes, from feces of infected humans	1 to 3 days	Profuse, watery diarrhea (rice-water stools), vomiting, abdominal pain, dehydration, thirst, collapse, reduced skin turgor, wrinkled fingers, sunken eyes	Raw fish and shellfish, foods washed or prepared with contaminated water, water	Stools	Obtaining fish and shellfish from sewage contaminated waters in endemic areas, poor personal hygiene, infected workers touching foods, inadequate cooking, using contaminated water to wash or freshen foods, inadequate sewage disposal, using night soil as fertilizer
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Pathogenic <i>Escherichia coli</i> gastroenteritis	Enterotoxigenic or invasive strains of <i>E. coli</i> from feces of infected humans and other animals	5 to 48 hours, mean 10 to 24	Abdominal pain, diarrhea, nausea, vomiting, fever, chills, headache, muscular pain	Various foods, water	Stools, rectal swabs	Infected workers touching foods, inadequate refrigeration, inadequate cooking, inadequate cleaning and disinfection of equipment
Salmonellosis	Various serotypes of <i>Salmonella</i> from feces of infected humans and other animals	6 to 72 hours, mean 18 to 36 hours	Abdominal pain, diarrhea, chills, fever, nausea, vomiting, malaise	Poultry and meat and their products, egg products, other foods contaminated by salmonellae	Stools, rectal swabs	Inadequate refrigeration, holding foods at warm (bacterial incubating) temperatures, inadequate cooking and reheating, preparing foods several hours before serving, cross contamination, inadequate cleaning of equipment, infected workers touching cooked foods, obtaining foods from contaminated sources
Shigellosis	<i>Shigella flexneri</i> , <i>S. dysenteriae</i> , <i>S. sonnei</i> , and <i>S. boydii</i> from feces of infected humans	24 to 72 hours	Abdominal pain, diarrhea, bloody and mucoid stools, fever	Any contaminated foods, frequently salads, water	Stools or rectal swabs	Infected workers touching foods, inadequate refrigeration, inadequate cooking and reheating
<i>Vibrio parahaemolyticus</i> gastroenteritis	<i>V. parahaemolyticus</i> from sea water or seafoods	2 to 48 hours, mean 12 hours	Abdominal pain, diarrhea, nausea, vomiting, fever, chills, headache	Raw seafoods, shellfish	Stools or rectal swabs	Inadequate cooking, inadequate refrigeration, cross contamination, inadequate cleaning of equipment, using sea water in food preparation
Incubation (Latency) Period Greater Than 72 Hours						
Viral Agents						
Viral gastroenteritis	Enteric viruses (ECHO viruses, Coxsackie viruses, reoviruses, adenoviruses)	3 to 5 days	Diarrhea, fever, vomiting, abdominal pain, sometimes respiratory symptoms	Unknown	Stools	Poor personal hygiene, infected workers touching foods, inadequate cooking and reheating

Parasitic Agents

Amebic dysentery (Amebiasis)	<i>Entamoeba histolytica</i> from feces of infected humans	5 days to several months, mean 3 to 4 weeks	Abdominal pain, constipation or diarrhea containing blood and mucus	Raw vegetables and fruits	Stools	Poor personal hygiene, infected workers touching foods, inadequate cooking
Beef tapeworm infection (Taeniasis)	<i>Taenia saginata</i> from flesh of infested cattle	3 to 6 months	Vague discomfort, hunger pain, loss of weight, abdominal pain	Raw or insufficiently cooked beef	Stools	Lack of meat inspection, inadequate cooking, inadequate sewage disposal, sewage contaminated pastures
Fish tapeworm infection (Diphyllobothriasis)	<i>Diphyllobothrium latum</i> from flesh of infested fish	5 to 6 weeks	Vague gastrointestinal discomfort, anemia may occur	Raw or insufficiently cooked freshwater fish	Stools	Inadequate cooking, inadequate sewage disposal, sewage contaminated lakes
Giardiasis	<i>Giardia lamblia</i> from feces of infected humans	1 to 6	Abdominal pain, mucoid diarrhea, fatty stools	Raw vegetables and fruits, water	Stools	Poor personal hygiene, infected workers touching foods, inadequate cooking, inadequate sewage disposal
Pork tapeworm infection (Taeniasis)	<i>Taenia solium</i> from flesh of infested swine	3 to 6	Vague discomfort, hunger pains, loss of weight	Raw or insufficiently cooked pork	Stools	Lack of meat inspection, inadequate cooking, inadequate sewage disposal, sewage contaminated pastures

NEUROLOGICAL SIGNS AND SYMPTOMS (VISUAL DISTURBANCES, TINGLING, PARALYSIS) OCCUR⁴

Incubation (Latency) Period Usually Less Than 1 Hour

Fungal Agents

Ibotenic acid group of mushroom poisoning	Ibotenic acid and muscimol in some mushrooms	30 to 60 minutes	Drowsiness and state intoxication, confusion, muscular spasms, delirium, visual disturbances	<i>Amanita muscaria</i> , <i>A. pantherina</i> and related species of mushrooms	Eating <i>Amanita muscaria</i> and related species of mushrooms, eating unknown varieties of mushrooms, mistaking toxic mushrooms for eatable varieties
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Muscarine group of mushroom poisoning	Muscarine in some mushrooms	15 minutes to 2 hours	Excessive salivation, perspiration, tearing, reduced blood pressure, irregular pulse, pupils constricted, blurred vision, asthmatic breathing	<i>Clitocybe dealbata</i> , <i>C. rivulosa</i> and many species of <i>Inocybe</i> and <i>Boletus</i> mushrooms	Vomitus	Eating muscarine group of mushrooms, eating unknown varieties of mushrooms, mistaking toxic mushrooms for eatable varieties
<i>Chemical Agents</i>						
Organophosphorous poisoning	Organic phosphorous insecticides, such as parathion, TEPP, diazinon, malathion	Few minutes to few hours	Nausea, vomiting, abdominal cramps, diarrhea, headache, nervousness, blurred vision, chest pain, cyanosis, confusion, twitching, convulsions	Any accidentally contaminated food	Blood, urine, fat biopsy	Spraying foods just before harvesting, storing insecticides in same area as foods, mistaking pesticides for powdered foods
<i>Toxic Animals</i>						
Shellfish poisoning	Saxitoxin and similar toxins from plankton, <i>Gonyaulax</i> species, which are consumed by shellfish	Few minutes to 30 minutes	Tingling, burning, numbness around lips and finger tips, giddiness, incoherent speech, respiratory paralysis	Mussels and clams		Harvesting shellfish from waters with high concentration of <i>Gonyaulax</i>
Tetraodon poisoning	Tetrodotoxin from intestines and gonads of puffer-type fish	10 minutes to 3 hours	Tingling sensation of fingers and toes, dizziness, pallor, numbness of mouth and extremities, gastrointestinal symptoms, hemorrhage and desquamation of skin, eyes fixed, twitching, paralysis, cyanosis	Puffer-type fish		Eating puffer-type fish, failure to effectively remove intestines and gonads from puffer-type fish if they are to be eaten
<i>Plant Toxicants</i>						
Jimson weed	Tropane alkaloids in Jimson weed	Less than 1 hour	Abnormal thirst, photophobia, distorted sight, difficulty in speaking, flushing, delirium, coma, rapid heart beat	Any part of plant, tomatoes grafted to Jimson weed stock	Urine	Eating any part of Jimson weed or eating tomatoes from tomato plant grafted to Jimson weed stock
Water hemlock poisoning	Resin and cicutoxin in hemlock root	15 to 60 minutes	Excessive salivation, nausea, vomiting, stomach pain, frothing at mouth, irregular breathing, convulsions, respiratory paralysis	Root of water hemlock <i>Cicuta virosa</i> and <i>C. maculata</i>	Urine	Eating water hemlock; mistaking water hemlock root for wild parsnip, sweet potato, or carrot

Incubation (Latency) Period 1-6 Hours

Chemical Agents

Chlorinated hydrocarbon poisoning	Chlorinated hydrocarbon insecticides such as aldrin, chlordane, DDT, dieldrin, endrin, lindane, and toxaphene	30 minutes to 6 hours	Nausea, vomiting, paresthesia, dizziness, muscular weakness, anorexia, weight loss, confusion	Any accidentally contaminated food	Blood, urine, stools, gastric washings	Storing insecticides in same area as food, mistaking pesticides for powdered foods
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Toxic Animals

Ciguatera poisoning	Ciguatoxin in intestines, roe, gonads, and flesh of tropical marine fish	3 to 5 hours, sometimes longer	Tingling and numbness about mouth, metallic taste, dry mouth, gastrointestinal symptoms, watery stools, muscular pain, dizziness, dilated eyes, blurred vision, prostration, paralysis	Numerous varieties of tropical fish	Eating liver, intestines, roe, gonads, or flesh of tropical reef fishes; usually large reef fish are more commonly toxic
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Incubation (Latency) Period Usually 12 to 72 Hours

Bacterial Agents

Botulism	Exo-neurotoxins A, B, E and F of <i>Clostridium botulinum</i> . Spores found in soil and animal intestines	2 hours to 8 days, mean 18 to 36 hours	Vertigo, double or blurred vision, dryness of mouth, difficulty in swallowing, speaking and breathing; descending muscular weakness, constipation, pupils dilated or fixed, respiratory paralysis. Gastrointestinal symptoms may precede neurological symptoms. Frequently fatal	Home canned low-acid foods, vacuum packed fish; fermented fish eggs, fish, and marine mammals	Blood, stool	Inadequate heat processing of canned foods and smoked fish, uncontrolled fermentations
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Incubation (Latency) Period Greater Than 72 Hours

Chemical Agents

Mercury poisoning	Methyl and ethyl mercury compounds from industrial waste and organic mercury in fungicides	1 week or longer	Numbness, weakness of legs, spastic paralysis, impairment of vision, blindness, coma	Grains treated with mercury-containing fungicide; pork, fish, and shellfish exposed to mercury compounds	Urine, blood, hair	Streams polluted with mercury compounds, feeding animals grains treated with mercury fungicides, eating mercury-treated grains or meat from animals fed such grains
Triorthocresyl phosphate poisoning	Triorthocresyl phosphate used as extracts or as substitute cooking oil	5 to 21 days, mean 10 days	Gastrointestinal symptoms, leg pain, ungainly high-stepping gait, foot and wrist drop	Cooking oils, extracts and other foods contaminated with triorthocresyl phosphate		Using compound as food extractant or as a cooking or salad oil

GENERALIZED INFECTION SIGNS AND SYMPTOMS (FEVER, CHILLS, MALAISE, ACHES) OCCUR

Incubation (Latency) Period Greater Than 72 Hours

Bacterial Agents

Brucellosis	<i>Brucella abortus</i> , <i>B. melitensis</i> and <i>B. suis</i> from tissues and milk of infected animals	7 to 21 days	Fever, chills, sweats, weakness, malaise, headache, muscle and joint pain, loss of weight	Raw milk, goat cheese	Blood	Failure to pasteurize milk, livestock infected with brucellae
Q fever	<i>Coxiella burnetii</i> from tissue and milk of infected animals	14 to 26 days, mean 20 days	Chills, headache, weakness, malaise, perspiration, fever, cough, chest pain	Raw milk (rare)	Blood	Ingestion of contaminated raw milk, failure to pasteurize milk (145°F; 30 minutes; 161°F, 15 seconds)

44 Typhoid fever	<i>Salmonella typhi</i> from feces of infected humans	7 to 28 days, mean 14 days	Malaise, headache, fever, cough, nausea, vomiting, constipation, abdominal pain, chills, rose spots, bloody stools	Shellfish, foods contaminated by workers, raw milk, cheese, watercress, water	Stools, rectal swabs, blood	Infected workers touching foods, poor personal hygiene, inadequate cooking, inadequate refrigeration, inadequate sewage disposal, obtaining foods from unsafe sources, harvesting shellfish from sewage-contaminated waters
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Viral Agents

Hepatitis A (Infectious hepatitis)	Hepatitis Virus A from feces, urine, blood of infected humans and other primates	10 to 50 days, mean 25 days	Fever, malaise, lassitude, anorexia, nausea, abdominal pain, jaundice	Shellfish, any food contaminated by hepatitis viruses, water	Urine, blood	Infected workers touching foods, poor personal hygiene, inadequate cooking, harvesting shellfish from sewage contaminated waters, inadequate sewage disposal
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Parasitic Agents

Angiostrongyliasis (Eosinophilic meningoencephalitis)	<i>Angiostrongylus cantonensis</i> (rat lung worm) from rodent feces and soil	14 to 16 days	Gastroenteritis, headache, stiff neck and back, low-grade fever	Raw crabs, prawns, slugs, shrimp, snails	Blood	Inadequate cooking
Toxoplasmosis	<i>Toxoplasma gondii</i> from tissue and flesh of infected animal	10 to 13 days	Fever, headache, myalgia, rash	Raw or insufficiently cooked meat (rare)	Biopsy of lymph nodes, blood	Inadequate cooking of meat of sheep, swine, and cattle
Trichinosis	<i>Trichinella spiralis</i> (roundworm) from flesh of infested swine, bear	4 to 28 days; mean 9 days	Gastroenteritis, fever, edema about eyes, muscular pain, chills, prostration, labored breathing	Pork, bear meat, walrus flesh	Muscle biopsy	Eating raw or inadequately cooked pork or bear meat, inadequate cooking or heat processing, feeding uncooked or inadequately heat processed garbage to swine

ALLERGIC-TYPE SYMPTOMS (FACIAL FLUSHING, ITCHING) OCCUR

Incubation (Latency) Period Less Than 1 Hour Bacterial (and Animal) Agents

Scombroid poisoning	Histamine-like substance produced by <i>Proteus</i> spp. or other bacteria from histidine in fish flesh	Few minutes to 1 hour	Headache, dizziness, nausea, vomiting, peppery taste, burning throat, facial swelling and flushing, stomach pain, itching or skin	Tuna, mackerel, Pacific dolphin	Vomitus	Inadequate refrigeration of scombroid fish
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Chemical Agents

Chinese restaurant syndrome	Monosodium glutamate (MSG)	Few minutes to 1 hour	Burning sensation in back of neck, forearms, chest; feeling of tightness, tingling, flushing, dizziness, headache, nausea	Chinese food		Using excessive amounts of MSG as flavor intensifier
Nicotinic acid (niacin) poisoning	Sodium nicotinate used as color preservative	Few minutes to 1 hour	Flushing, sensation of warmth, itching, abdominal pain, puffing of face and knees	Meat or other food in which sodium nicotinate has been added		Using sodium nicotinate as color preservative

		Incubation (Latency) Period 1 to 6 Hours				
		<i>Toxic Animals</i>				
Hypervitaminosis A	Vitamin A	1 to 6 hours	Headache, gastrointestinal symptoms, dizziness, collapse, convulsions, insomnia, desquamation of skin	Liver and kidney of arctic mammals	Blood	Eating liver and kidney of animals from cold regions

¹Symptoms and incubation periods will vary with the individual and group exposed because of resistance, age, and nutritional status of individuals; number of organisms or concentration of poison in ingested foods, amount of food ingested, and pathogenicity and virulence of strain of microorganism or toxicity of chemical involved. Several of the illnesses are manifested by symptoms in more than one category and have an incubation range that overlaps the generalized categories.

²A more detailed review can be found in: Bryan, F. L. 1975. Diseases Transmitted by Foods (A classification and summary) Center for Disease Control, Atlanta, Georgia.

³Samples of any of the listed foods that have been ingested during the incubation period of the disease should be collected.

⁴Carbon monoxide poisoning may simulate some of the diseases listed in this category. Patients who have been in closed cars with motors running or have been in rooms with improperly vented heaters are subject to exposure to carbon monoxide.

Emergency Vector Control Following Disasters

A. Rodent Control

1. Controlling rodent populations, not individual rodents, is the key to successful emergency rodent control.
2. Man can reduce rodent populations and keep them low by permanently eliminating their food, water, or harborage. Once a rodent population is allowed to increase so as to become threatening to humans, exterminating through trapping and poisoning must follow reduction of food, water, and harborage or the population will merely move to another locality where all of the above is abundant.
3. The following steps are necessary to control a rodent population after a disaster or during normal circumstances:
 - a. Eliminate the food supply -- Properly store garbage and rubbish in rodent-proof containers. During an emergency, this material may have to be buried with at least two feet of soil cover if adequate storage is not available on site.
 - b. Eliminate the home of rodents -- Properly store or dispose of debris that adequately protects rodents during nesting and other normal activities. All lumber, pipes, and other salvageable material should be stored in the open at least twelve inches off the ground. All other harborage materials must be disposed of as soon as possible.
 - c. Rodent-proof buildings -- Make repairs to keep rodents out of your house and other buildings. Openings in foundation walls and thirty inches above ground should be rodent stopped with metal or masonry. (This includes pipes, wires, and conduits.)
 - d. Kill the rodents
 - (1) Trap rodents -- Attach a piece of cardboard to the trap to make it more effective. Bacon, walnuts, raisin bread, or fish make good trap bait. Set the trap against the wall and make a tunnel which will lead the rodent right to the trap. Wearing gloves, wrap dead rodents in paper and put in covered garbage can or burn them.
 - (2) Exterminate rodents -- A poison containing an anticoagulant such as warfarin, coumafuryl, pindone, diphacinone, valone, or chlorophacinone are baits recommended for use by the general public to exterminate rodents on premise. If you need additional help in getting rid of rodents, hire a professional exterminator.

B. Arthropod Vectors

1. Mosquito control (appropriate generally mid-April to mid-November)

a. Personal protection

- (1) If possible, stay indoors in the hours immediately before and after sunset.
- (2) If you must be out of doors, wear long sleeves, long trousers, long stockings, and use repellents.
- (3) If you are camping, use mosquito netting to seal out the mosquitoes, use a safe insecticide spray on inside walls, and swat the mosquitoes found inside the tent or camper.
- (4) Maintain house screens in good repair and swat mosquitoes found on inside walls.

b. Eliminate breeding places -- Mosquito eggs cannot hatch unless they are in water. Look for standing water on your premises; eliminate it if possible and practical. Follow these steps:

- (1) Remove unneeded, temporary water containers.
- (2) Flatten or dispose of tin cans.
- (3) Place discarded bicycle and automobile tires in places where water cannot get into them.
- (4) Fill in tree holes with concrete.
- (5) See that cisterns, cesspools, septic tanks, fire barrels, rain barrels, and tubs in which water is stored are tightly covered.
- (6) Empty and thoroughly wash birdbaths and pans for watering chicks and dogs at least once a week.
- (7) Clean out rain gutters.
- (8) Examine flat roofs after rains; be sure no water remains on them.
- (9) Drain or fill in stagnant pools and swampy places. If pools cannot be drained or filled in, remove debris and floating vegetation.
- (10) Examine stock-watering tanks for larvae or pupae at least once each week; keep them clean; repair leaks.
- (11) Fill around watering devices to prevent water from standing. Gravel or cinders make the best fill, but coarse sand may be used.

- (12) Examine philodendron and other plants in water in the house. Potted plants will not breed mosquitoes, but saucers under the plants may accumulate enough water for breeding.
 - (13) Examine fish bowls and aquariums for larvae; not all kinds of fish destroy mosquito larvae.
 - (14) Check ponds and oxidation lagoons for larvae. Remove weeds, other vegetation, and floating debris from them. Prevent shading.
 - (15) Control on lagoons should be restricted to using a very light film of diesel oil or kerosene and spraying the water area that has grass or weeds growing and spray on the water one and one-half feet from the water's edge and using only a light film of oil on the water surface.
- c. Kill the larvae -- One dollar spent in larvae control equals ten dollars spent in adult mosquito control.
- (1) If standing water on your premises cannot be eliminated, examine it at least once a week to find out whether larvae are present. Dip out some water with a pan or cup; a white utensil is preferable because the larvae can be seen easily against a white background.
 - (2) For standing water, apply fuel oil or diesel fuel at the rate of one to five gallons per acre, with a spreading agent.
 - (3) To kill mosquito larvae in a fishpond or ornamental pool without poisoning fish or plants, apply a light mist spray of a pyrethrum oil solution -- usually obtainable in hardware, department, and food stores and called "pyrethrins" and "petroleum distillate."

BEFORE USING ANY INSECTICIDES, READ THE LABEL AND FOLLOW LABEL DIRECTIONS
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d. Adult mosquitoes around the house

- (1) Where possible, eliminate all standing water breeding areas. This includes vases, old tin cans, clogged roof guttering, storm sewers, etc. Get rid of, drain, or spray with oil all such breeding areas.

- (2) It often helps to spray shrubbery and other dense, low-growing vegetation around the home with residual applications of one of the following when mosquitoes are a problem:
 - (a) Use carbaryl made by mixing two tablespoons 50% Sevin wettable powder in one gallon of water.
 - (b) Or use fenthion made by mixing four tablespoons 45% Baytex spray concentrate in one gallon of water.
 - (c) Or use malathion made by mixing nine tablespoons 57% malathion emulsifiable concentrate in one gallon of water.
 - (d) Repeat applications as needed.
- (3) Space sprays or aerosols containing 0.5% dichlorvos or 0.1% pyrethrins plus piperonyl butoxide may be used to control those mosquitoes that get into the house.

Department of Social Services
Division of Health
Section of Laboratory Services

Taking the few extra minutes necessary to insure proper specimen collection for the laboratory pays large dividends in types of reports issued and may well be the difference in having or not having laboratory confirmation of causative agents. Laboratories are like computers in that the same saying applies, "Garbage in - Garbage out." Additional detailed information on specimen collection is available in the Manual of Services put out by the Division of Health Laboratory.

EMERGENCY TELEPHONE NUMBERS

E. R. Spurrier, Dr. P.H., Director - Office (314) 751-3334
Home (314) 365-5567

Central Laboratory
Office (314) 751-3334 All Units
307 West McCarty Street
Jefferson City, MO 65101

Larry Evert - Asst. Director
Home (314) 635-4808

Unit - Microbiology
Beverley Payne - Unit Chief
Home (314) 893-4219

Enteric Bacteriology
Gonorrhea Testing
Reference Bacteriology
Fungus Cultureing
Parasitology

Unit - Serology
Henry Strother - Unit Chief
Home (314) 636-5933

Syphilis Serology
Fungal Serology
Parasitic Serology
Bacterial Serology

Unit - Virology
John Goins - Unit Chief
Home (314) - 634-4431

Virus Isolation
Virus Serology
Rabies Testing

Unit - Environmental Bacteriology
Judy Heady - Unit Chief
Home (314) 635-1811

Water Testing
Food Testing
Milk Testing

Unit - Chemistry
R. H. Gnaedinger, Ph.D., - Unit Chief
Home (314) 635-9463

Pesticide & Herbicide Water Testing
Metal and Mineral Water Testing
Lead Testing in Blood and Paint
Fluoride in Water

BRANCH LABORATORIES

Southeast Branch
1812 South Broadway
Poplar Bluff, MO 63901
(314) 785-9634
Bob Dickerson - Microbiologist IV
Home (314) 785-2932

Southwest Branch
1154 East Latoka
Springfield, MO 65807
(417) 883-1527
Claude Williams - Microbiologist IV
Home (417) 866-0097

HOW TO SUBMIT SPECIMENS FOR ENTERIC INFECTIONS

The Division of Health Laboratory will test for the presence of Salmonella, Shigella and Campylobacter in raw specimens sent in the proper preservative (Enteric Kits). Routine testing is not done for other pathogens, but can be arranged by contacting the laboratory (314) 751-3334.

Specimen Collection

Campylobacter: Fecal specimens for Campylobacter can be submitted in the enteric kit. These organisms will survive in the enteric transport medium if the vial is kept cold during transit.

Cholera: Contact the Microbiology Unit (314) 751-3334, for instructions on sending specimens for cholera.

Salmonella-Shigella: A portion of stool the size of a marble is added to transport medium in Enteric Kit. Emulsify the specimen before shipment.

If the stool is liquid, add about 2 - 5 ml of the specimen to the preservative in the bottle. Any bits of mucosa or mucus in the stool should be included.

Before shipping, screw cap on tight and seal with tape to prevent leakage. Specimen should be kept cold during transit.

Yersinia: Fecal specimens for Yersinia can be submitted in the enteric kit. These organisms will survive in the enteric transport medium if the vial is kept cold during transit.

C. botulinum: Contact Microbiology Unit (314) 751-3334, for instructions on sending specimens for botulism. Do not proceed without direction.

C. perfringens: Contact Microbiology Unit (314) 751-3334, for instructions on sending specimens. Do not proceed without directions.

HOW TO SUBMIT SPECIMENS FOR INTESTINAL PARASITES

The diagnosis of infestation with intestinal parasites is generally dependent on the microscopic examination of feces to identify eggs and larvae of helminth specimens and cysts and trophozoites of protozoan species.

USE THE INTESTINAL PARASITE SPECIMEN COLLECTION KIT AND FORM LAB 27

1. The formaldehyde vial is for preservation of cysts, eggs and larvae. The amount of feces placed in this vial need not be bigger than a walnut. Emulsify the specimen.
2. The "PVA" (polyvinyl alcohol) vial is for preservation of trophozoites and replaces the need for fresh warm stool. The amount of feces placed in the PVA vial should not be bigger than a pea. Emulsify the specimen.
3. For a patient to be considered negative for intestinal parasites, stools taken on three consecutive days should be submitted.

NOTE: Specimens submitted in enteric collection kits are not acceptable for parasite examination or vice versa.

HOW TO SUBMIT SPECIMENS FOR MENINGITIS

Niesseria meningitidis cultures, whenever possible, should be performed at a local laboratory, then sent to the Division of Health Central Laboratory for confirmation.

Specimen Collection

Cultures suspected of being Niesseria meningitidis should be submitted on chocolate agar for confirmation and grouping.

HOW TO SUBMIT SPECIMENS FOR STAPHYLOCOCCAL INFECTIONS

Collection and Shipment of Specimens

As no specific kit is available from the Division of Health Laboratory to transport raw samples, if staphylococcus is suspected, contact the laboratory and transport media will be arranged.

HOW TO SUBMIT FOOD SAMPLES

Notify the laboratory in advance when and how the samples are being shipped, when they should arrive and the tests desired.

Submit food samples in the original container if possible; otherwise transfer approximately 100 grams, 100 ml or 4 ounces of the suspected food to a sterile sample bottle or other waterproof container, pack with ice or freeze pillows in a second leakproof, insulated shipping container and ship by the most rapid means. If food from an open container is suspected, sealed containers of the same production lot should be submitted for testing.

Form - Lab 52 must accompany each sample.

Extraction and identification of botulinum toxin is not conducted in this laboratory. Arrangements can be made to have the tests conducted at CDC. Handle all materials suspected of containing botulinum toxin with maximum precaution. The toxins are extremely poisonous.

Food samples for the enumeration of Clostridium perfringens must be delivered as soon as possible under refrigeration. At 4° C some vegetative cells of C. perfringens will die, causing lower viable counts. This fact should be kept in mind when interpreting quantitative data. Freezing drastically lowers viable counts. Shipment without refrigeration permits vegetative cells to multiply and may result in unusually high colony counts.

Feces specimens and/or vomitus specimens should be collected as soon as possible and submitted to the laboratory along with the food samples. This is especially important when Clostridium perfringens is suspected. Check with the laboratory as to type of container prior to collection of feces specimens.

HOW TO SUBMIT SPECIMENS FOR CHEMICAL ANALYSIS

CHEMISTRY

Food Contamination/Poisoning

1. Heavy Metals
2. Strychnine
3. Insecticides
4. Additives
5. EDB

Container

If not original then a clean
glass or plastic

Water Contamination/Poisoning

1. Heavy Metals
2. Minerals
3. Radioactivity
4. Insecticides
5. Herbicides
6. Trihalomethanes

Clean glass or plastic

Clean glass with teflon
lined lid

Lead Poisoning - Blood

1. Lead

Lead free glass

For additional information call:

R. H. Gnaedinger 314-751-3334
John Bitter 314-751-3334

HOW TO SUBMIT SPECIMENS FOR VIRUS INFECTIONS

In the event of an emergency in which viral agents are involved it is imperative that satisfactory specimens be submitted. The proper transport medium must be used and the specimens should be kept cold until delivered to the laboratory. When possible the laboratory should be notified ahead of time regarding the delivery, giving pertinent details such as how many specimens, disease suspected, time of arrival, carrier used, etc. Since specimens related to different viruses may have different requirements relative to collection techniques, it is best to phone the laboratory (314)-751-3334 for instructions before taking the specimens.

In the case of rabies specimens the suspected animal brain is examined. Sometimes it is advisable to confine the animal rather than submit the animal head to the laboratory. The advice of a veterinarian is helpful. Do not submit the whole animal.

The results of viral tests usually take several weeks to obtain. This is due to the nature of the tests, such as the growth characteristics of viruses. The results of rabies microscopic tests, however, are given the working day after the specimen is received.

If the Manual of Laboratory Services is available, more specific details can be obtained from the manual.